



**CENTER FOR NATION RECONSTRUCTION AND  
CAPACITY DEVELOPMENT**  
United States Military Academy  
West Point, New York 10996

**August 2011**

# **THE SUDAN AND DEVELOPMENT OF POST CONFLICT INDICATORS**

## **Prepared By**

Cadets Timothy Dean, You Li, Russell Mixon,  
Michael Park and LTC Kenneth W. McDonald, PhD  
Department of Systems Engineering  
United States Military Academy  
West Point, NY 10996



## **Prepared For**

United States Africa Command  
OSD Science and Technology Advisor  
Unit 29951  
APO AE 09751



Approved for public release; distribution is unlimited.

**Report 2011-4  
DTIC: ADA547383**

Cover photograph - Rwandan Forces board a C-17 at Kigali International Airport, Rwanda, July 17, 2005. The United States is providing transportation for 1,200 Rwandan forces to Sudan in support of the African Union Mission in Sudan (AMIS 2). Defense Dept. photo by U.S. Air Force Staff Sgt. Bradley C. Church

## About Us

The Superintendent of the United States Military Academy (USMA) at West Point officially approved the creation of the Center for Nation Reconstruction and Capacity Development (C/NRCD) on 18 November 2010. Leadership from West Point and the Army realized that the US Army, as an agent of the nation, would continue to grapple with the burden of building partner capacity and nation reconstruction (NR) for the foreseeable future. The Department of Defense (DoD), mainly in support of the civilian agencies charged with leading these complex endeavors, will play a vital role in NR and capacity development (CD) in both pre and post conflict environments. West Point affords the C/NRCD an interdisciplinary perspective making it uniquely postured to develop training, education, and research to support this mission.

The mission of the C/NRCD is to take an interdisciplinary and systems approach in facilitating and focusing research, training, information dissemination, and professional practice in the planning, preparation, execution, and assessment of efforts to construct infrastructure, policy, competency development, and governance to support to the transformation of communities and nations mainly in developing countries in both pre and post conflict environments or in the aftermath of a natural or manmade disaster.

The C/NRCD has a strong focus on professional practice to support the development of current and future Army leaders by providing opportunities for cadets and faculty to study abroad and other immersion experiences in addition to conducting research to support the NR and CD of the Army.

The C/NRCD aims to:

- Enrich cadet education through cultural immersion experiences, added research opportunities, increase resources, and other extra-curricular educational opportunities,
- Provide professional development opportunities for faculty,
- Enhance West Point's reputation as an intellectual asset to DoD and the nation,
- Enhance West Point's reputation as the national leader in undergraduate education,
- Provide needed research, training, and education for these problems of national and international priority,
- Leverage West Point's intellectual capital by engaging in mutually beneficial relationships with the Army, DoD, and other national and international organizations to provide solutions to problems of national and global significance,
- Provide for the integration of new analytical techniques, doctrine, and technologies across multiple disciplines,
- Facilitate relationships between the Army and various NGOs, DoD, and non-DoD federal agencies involved in the NR and CD effort,
- Provide avenues to disseminate knowledge in the NR and CD disciplines, and
- Facilitate publication of significant contributions in NR and CD and related disciplines.

For more information please contact:



Center for Nation Reconstruction and Capacity Development  
Attn: Dr. John Farr, Director  
Department of Systems Engineering  
Mahan Hall, Bldg. 752  
West Point, NY 10996  
[John.Farr@usma.edu](mailto:John.Farr@usma.edu)  
845-938-5206

This Page Intentionally Left Blank

## Abstract

Southern Sudan had been at civil war with the north since 1955 for various reasons to include religion, politics, and oil. The second civil war ended in 2005 with the signing of the Comprehensive Peace Agreement (CPA)<sup>1</sup>. A promise outlined in the CPA was the opportunity for Southern Sudan to vote for their independence from the North. The referendum took place this January with 98 percent of votes in favor of separation. This is great news for the people of Southern Sudan and champions of democracy worldwide. However, Southern Sudan is plagued by many of its own internal problems and instability and there is the possibility of civil war.

In support of the emergence of South Sudan and other countries worldwide, our research determined that the four main areas of focus in predicting civil war or the potential for conflict were security, social, economic, and governance. More specific conflict indicators were developed within each of these functions.

To better understand the inter-relationships of these functions a Systemigram<sup>2</sup> and a value model were developed. Conflict in Sudan is far from a simple problem. There are many factors that influence other factors and add or take away from the possibility of civil war. The Systemigram attempts to mitigate some of the confusion by providing a visual representation of the problem in Southern Sudan which enables us to examine the links and interactions between the functions and indicators of the system. The value model is a mathematical model that takes statistics for each of the indicators developed as inputs and computes a value which when added to the other indicators values provide a total score indicating the likely progression of Southern Sudan toward civil war. These two products work together: the intent of the Systemigram is to show the interactions between the indicators and help validate the method of scoring using the value model.

Based upon the value model and using the most up-to-date statistics for each indicator a baseline is developed. The baseline can be used as a starting point for future work in this area.

The goal of the research is to develop a user-friendly tool for USAFRICOM. Their analysts will use these tools as templates that can be modified for predicting conflict in post-civil war states.

---

<sup>1</sup> See Appendix A for a list of all acronyms and abbreviations used in this report.

<sup>2</sup> A Systemigram is a visual way to define interactions. Verbs are used document these interactions. Systemigrams are a communications tool much like a causal loop diagram.



This Page Intentionally Left Blank

## Table of Contents

Chapter	Topic	Page
	Abstract .....	i
1	Introduction .....	1
	1.1 Overview .....	1
	1.2 Research Methodology .....	1
	1.3 Current System .....	2
2	Literature Review .....	3
	2.1 Background Research .....	3
	2.2 Indicator Research .....	9
3	Products .....	18
	3.1 Quantitative Value Model .....	21
	3.2 Systemigram .....	22
	3.3 Swing Weight Matrix .....	36
	3.4 Input Matrix .....	38
4	Summary and Conclusions .....	39

## Appendices

Chapter	Topic	Page
A	List of Acronyms and Abbreviations .....	41
B	World Refugee Hotspots .....	42
C	Cumulative Figures of Conflict Related Displacement .....	43
D	Structured View of Bishops in Sudan .....	44
E	Human Rights Index (PTS) Comparison .....	45
F	Water Conflicts in the Horn of Africa .....	46
G	Indicator Value Function and Graph for Security .....	47
H	Indicator Value Function and Graph for Governance .....	50
I	Indicator Value Function and Graph for Economy .....	53
J	Indicator Value Function and Graph for Social .....	55
K	Combined Systemigram – Functional Objectives and Indicators .....	57
L	Combined Systemigram – Functional Objectives .....	58
M	Security Systemigram .....	59
N	Governance Systemigram .....	60
O	Economy Systemigram .....	61
P	Social Systemigram .....	62
Q	Input Matrix – Initial, Best Case Scenario .....	63
R	Input Matrix – Current Sample Data .....	64
S	Stakeholder Requirements and Subject Matter Experts Interview .....	65

## List of Figures

Number	Figure Title	Page
1.1	The USMA Systems Decision Process .....	1
2.1	Security Indicators .....	9
2.2	Governance Indicators .....	12
2.3	Economic Indicators .....	13
2.4	Social Indicators .....	15
3.1	Qualitative Value Hierarchy .....	19
3.2	Security Function .....	20
3.3	Governance Function .....	20
3.4	Economy Function .....	21
3.5	Social Function .....	21
3.6	Elements of a swing weight matrix .....	37
3.7	Swing weight matrix for our conflict indicator model .....	38



## Chapter 1 Introduction

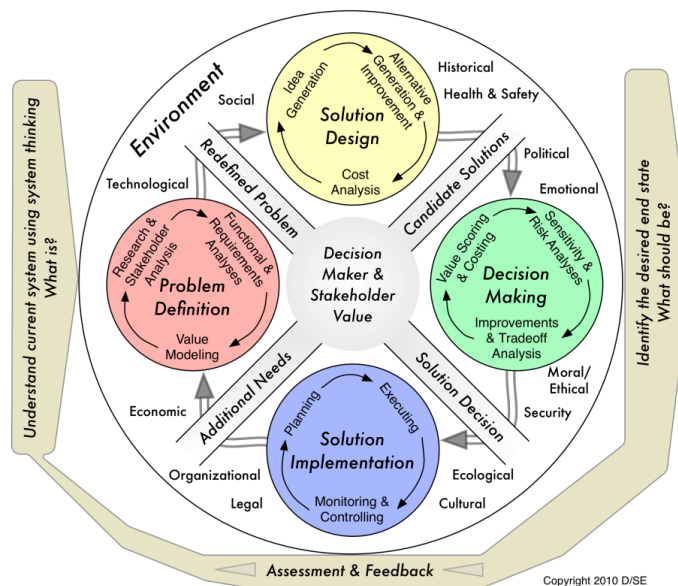
### 1.1 Overview

The purpose of this research is to use value focused thinking to predict civil war in unstable or emerging nations. The intent is to validate and establish an approach to these problems as the ideal and most reliable method for predicting conflict. The products developed here are done with the intent that they are used by Army and the stability operations community as a means to predict conflict in regions such as Southern Sudan.

This research was to develop user-friendly tools for the Army to utilize in order to predict conflict, in Southern Sudan. The tools are designed so that data can be entered into the model and an immediate number value is computed. This output number is the resulting likeliness that Southern Sudan will fall into civil war. A visual model also accompanies the mathematical model to allow for a clearer understanding of the math behind the evaluation and the interactions between the different factors involved.

### 1.2 Research Methodology

The Systems Decision Process (SDP) is the organizational model that structured our work effort during this project. It is a comprehensive and proven method for problem solving and decision making. It is flexible enough to accommodate the needs of almost any problem and is shown in Figure 1.1.<sup>1</sup>



**Figure 1.1** The USMA Systems Decision Process

*Problem Definition* began in early January 2011 when we were tasked with developing a weighted scoring approach to post conflict indicators in Southern Sudan for U.S. Army Africa Command (USAFRICOM).

<sup>1</sup> Parnell, Gregory S., Patrick J. Driscoll, and Dale L. Henderson. *Decision Making in Systems Engineering and Management*. Second Edition. New York: John Wiley and Sons (2010), p. 17.

We conducted background research on US Policy to date, Darfur, the role of religion, the referendum, and the history of Sudan. We presented our findings and continued to research literature on Sudan. We began development of a comprehensive Systemigram<sup>2</sup>, which allowed us to develop an initial scaffold of the weighted value model. After submitting our initial work and receiving feedback from USAFRICOM, we had our research statement clearly defined to create a tool for evaluating the likelihood of Southern Sudan falling into civil war.

During *Solution Design*, we took our stakeholder analysis and enhanced our Systemigram and value model through interviews with subject matter experts as well as stakeholders with a Sudan perspective. This proved critical to validating the model. Continued group collaboration, research, and tweaking of the model led to our finished product. Our project is unique and very specific which eliminated the alternative generation portion of this phase.

The *Decision Making* phase is left to the analysts working for USAFRICOM. Time constraints, limited our work to the creation of the weighted value model. The future work in this area involves interpreting the output and determining the significance of specific numerics. Sensitivity analysis is also a possible area of future work.

*Solution Implementation* is left to the USAFRICOM stakeholders. The weighted value model provides them the tools they required to analyze Southern Sudan. Expansion and implementation beyond this initial model is the decision of USAFRICOM.

### 1.3 Current System

Numerous tools exist which measure different statistics and compare them on a state-by-state basis after the fact. However, no tools provide anything that actually predicts conflict. Rather, they simply allow users to compare statistics against other states. Conversely, the weighted value model developed here should provide a value prediction of possible conflict before it occurs.

Current systems do not tailor their models to a specific state. What may fit a certain conflict may not necessarily have a similar impact or relevance in other conflicts. For example, the issue of cattle raids is extremely important in Southern Sudan. However, cattle raiding may not really be a problem or may not even exist in another nation. Our model addresses conflict indicators that are unique to Southern Sudan, providing us with the most accurate results possible.

The weighted value model uses indicators that were developed specifically for Southern Sudan. Additionally, the indicators in the model are weighted according to their significance against each based on the variability of the scoring range and the stakeholder importance.

One major area where current models fail to provide clarification is in interactions between indicators. They view the different statistics and indicators as stand-alone separate entities. This is far from how real-world conflict indicators function. Our model addresses this oversight in the current system through the development of the Systemigram. The Systemigram shows a visual representation of the interactions between the functions of the system.

To summarize, the weighted value model developed here has enhanced current models by providing a comprehensive relational approach to the development of a predictive model versus an after-the-fact model.

---

<sup>2</sup> A Systemigram is a portmanteau word taken from systemic and diagram. It is therefore a diagram but one that is faithful to pre-existing prose; in other words one should not attempt to construct a Systemigram from first thoughts. Rather it is a structured translation of the words and meanings that appertain to a piece of structured writing that for example captures strategic intent. More details can be found at <http://www.boardmansauser.com/thoughts/systemigrams.html>

## Chapter 2

### Literature Review

#### 2.1 Background Research

##### 2.1.1 US Policy to Date

The U.S. has had an up-and-down relationship with Sudan since it gained its independence in 1956. In the 1950s a struggle developed between the Arab-Islamic north and the non-Muslim south. Pro-Soviet General Nimeiri seized power in Sudan in 1969, breaking relations with the U.S. However, a communist coup attempted to overthrow Nimeiri in 1971, causing him to change his position. When the Soviets initiated a buildup in Ethiopia in the 1970s, the United States saw it as a threat and invested over \$2 billion in arming Sudan. During this time, there was a power struggle in Sudan and the National Islamic Front (NIF) came to power. Instead of using the U.S. armament against Soviet buildup, they turned their weapons on the oil-rich south. The U.S. cut off aid immediately.<sup>3</sup>

In 1993, the Clinton Administration labeled Sudan as a “state sponsor of terrorism” and a “rouge state.” It has been accused of providing a safe-haven for terrorist groups: al-Qaeda, Hezbollah, Hamas, Palestinian Islamic Jihad, Abu Nidal Organization, Jamaat al-Islamiyya, and the Islamic Egyptian Jihad.<sup>4</sup>

Sudan’s support of Iraq is the second factor creating tension between their relations with the U.S. Osama bin Laden left Saudi Arabia in 1991 and entered Sudan’s capital city of Khartoum. While here, a series of terrorist attacks against the U.S. stemmed from this region.<sup>5</sup>

Sudan has made an active effort to wipe away terrorism, although the U.S. still holds them on the list of states that support terrorism, due to their support of Hamas, supposed aiding of Iraq, and the ongoing crisis in Darfur. With U.S. intervention, they forced bin Laden out in 1996 and began destroying al-Qaeda groups. They closed down the Popular Arab and Islamic Conference, a meeting group for terrorism. They have ratified eleven of the twelve big protocols against terrorism. In 1999, Sudan signed the International Convention for the Suppression of Financing of Terrorism and in 2000 the International Convention for the Suppression of Terrorist Bombing.<sup>6</sup>

The labeling of a state as a sponsor of terrorism by the U.S. applies four basic actions against the state: a ban on arms-related exports and sales, controls over exports that may be used to support terrorism, prohibitions on economic assistance, and the imposition of several other restrictions.<sup>7</sup>

##### 2.1.2 Darfur: Role of Religion (Christianity/Islam)

There are three major religious groups within Sudan. Residing mainly in the North, the Sunni Muslim people make up 70% of the population. Christians only constitute no more than 10% of the population and are mostly in south and in the capital city of Khartoum.<sup>8</sup> Indigenous beliefs make up another 20-25%; animism and other forms of deity worship are included in this group.<sup>9</sup> Prior to the 17<sup>th</sup> century, the Darfur region had little to no contact with the Islamic world. Islamic influence grew between the 17<sup>th</sup> century and late 18<sup>th</sup> century and thus began the “Islamization” of Darfur.<sup>10</sup>

<sup>3</sup> Connell, Dan. “Sudan: Recasting U.S. Policy” Foreign Policy in Focus 11 Oct. 2005. 27 Jan. 2011  
<[http://www.fpif.org/reports/sudan\\_recasting\\_us\\_policy](http://www.fpif.org/reports/sudan_recasting_us_policy)>.

<sup>4</sup> Bhattacharji, Preeti. “State Sponsors: Sudan.” Council on Foreign Relations 2 April, 2008. 27 Jan. 2011  
<[http://www.cfr.org/publication/9367/state\\_sponsors.html](http://www.cfr.org/publication/9367/state_sponsors.html)>.

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> Chapin-Metz, Helen. “Sudan, a Country Study.” Federal Research Division, Library of Congress. June, 1991. Accessed Jan 18, 2011. <http://lcweb2.loc.gov/frd/cs/sdtoc.html>

<sup>9</sup> “CIA World Fact Book.” Field Listings. CIA. Accessed 12/01/2011 <<https://www.cia.gov/library/publications/the-world-factbook/fields/2122.html?countryName=Sudan&countryCode=SU&regionCode=af&#SU>>.

<sup>10</sup> Salih, M.A. Mohamed. “Understanding the Conflict in Darfur”. Centre of African Studies, University of Copenhagen. May 2005. Accessed 18 Jan, 2011. [http://www.teol.ku.dk/cas/research/publications/occ.\\_papers/muhammed\\_salihsamletpaper.pdf](http://www.teol.ku.dk/cas/research/publications/occ._papers/muhammed_salihsamletpaper.pdf), Pg 8

Based on ethnic cultures, the Sudanese people mainly are classified into two cultures: Arab and Black-African. Despite common language, religion, and self-identification, Arabs did not constitute a cohesive group.<sup>11</sup> The Arab groups originally were not all Arabic speaking, but religious strife between the groups gradually forced more and more people to identify with one group or another.

In 1986, a number of Arab tribes banded together to form the “Arab Alliance” in order to better represent themselves in the political scene.<sup>12</sup> In response, rebel groups such as the SPLA (Sudan Peoples’ Liberation Army) in the south began to keep Arabs in detention camps in order to limit the threat against their power and to keep the Arab government in check. Fur insurgents in the Sudan Liberation Movement/Army and Justice and Equality Movement rose up against the government because they thought the government punished non-Arabs.<sup>13,14</sup>

Religious tensions have been undeniably strained in one of the world’s longest enduring conflicts, more famously known as the “second Sudan civil war” began in 1983 and continued until at 2005.<sup>15</sup> This is mainly a response from the SPLA against the Arab government’s actions to impose Islamic law, sharia, on the nation.<sup>16</sup>

After the second civil war began, Arab political leaders sought to take control of the Khartoum government. In June of 1986, Sadiq al Mahdi, supported by the Umma, the DUP, and the NIF formed a coalition government. Together, they wanted to maintain Arab control of the government and end the conflict in the south. Mahdi had promised many things to the people and other representatives in the government, but he ultimately failed to deliver on many of his promises. This led to the disintegration of the coalition government.

Meanwhile, Colonel Umar Hassan Ahmad al Bashir, supported by the NIF, overthrew Sadiq’s government on June 30, 1989, and established the Revolutionary Command Council for National Salvation to rule Sudan. He is the current ruler of Sudan.

The Darfur Peace Agreement was signed on May 5, 2006. This hopes to end the conflict between the Sudan Liberation Movement, led by Mini Menawi and promises to disarm the militias and also downsizes other para-military rebel groups in the region. In exchange, this agreement provides the rebel groups with twelve seats in the National Assembly in the capital city of Khartoum, among other seats of representation throughout the Darfur region.<sup>17</sup>

In total, over two million people died in Sudan’s civil wars. US Secretary of State Colin Powell first called this “genocide” in 2004, attributing the horrors of the conflict to the ethnic and religious differences in the people of Sudan.<sup>18,19</sup>

---

<sup>11</sup> Chapin-Metz, Helen.

<sup>12</sup> Mareng, Chuei. “The Sudan’s Dimensions: A country divided by ethnicity and religion”. *African Journal of Political Science and International Relations*, Vol. 3 (12), 532-539. December, 2009. Accessed 20 Jan 2011.  
<http://www.academicjournals.org/AJPSIR/PDF/Pdf2009/December/Mareng.pdf>, Pg 3.

<sup>13</sup> Hugo Slim, “Dithering over Darfur? A Preliminary Review of the International Response”. *International Affairs (Royal Institute of International Affairs 1944-)* Vol. 80, No. 5 (Oct., 2004), pp. 811-828

<sup>14</sup> Julie Flint, “Darfur: Dying for Peace”. *Review of African Political Economy* Vol. 33, No. 108, North Africa: Power, Politics & Promise (Jun., 2006), pp. 326

<sup>15</sup> J. J. Welling, “Non-governmental Organizations, Prevention, and Intervention in Internal Conflict: Though the Lens of Darfur”. *Indiana Journal of Global Legal Studies* Vol. 14, No. 1 (Winter 2007), pp. 147-155.

<sup>16</sup> Alex de Waal, “Darfur”. *Review of African Political Economy*. Vol. 33, No. 110, Religion, Ideology & Conflict in Africa (Sep., 2006), pp. 740.

<sup>17</sup> Office of the Spokesman. “Fact Sheet: Darfur Peace Agreement”. US State Department. May 8, 2006. Accessed Jan 12, 2011.  
<http://web.archive.org/web/20080220140754/http://www.state.gov/r/pa/prs/ps/2006/65972.htm>

<sup>18</sup> Welling, pp. 153-154

<sup>19</sup> Scott Straus, “Darfur and the Genocide Debate”. *Foreign Affairs* Vol. 84, No. 1 (Jan. - Feb., 2005), pp. 123-126

### 2.1.3 Sudan Referendum

Currently, the nation of Sudan is fundamentally and geographically separated into two groups: the Northern Sudanese who are represented by the central government in Khartoum, and the Southern Sudanese who are represented by the Sudan People's Liberation Movement (SPLM). During the Second Sudanese Civil War, the two sides reached a peace agreement that gave the South the power to organize and hold a referendum. This Sudan Referendum involves a vote that began on January 9, 2011 on to remain part of Northern Sudan or to secede and become an independent nation (Downie). Like any nation that has a portion secede, this situation comes with complications. As the polls closed on January 15, 2011, official results as expected were overwhelmingly for in secession.

The referendum follows decades of civil war resulting in over 2 million deaths (Kaufman). Sudan is organized regionally, tribally, and most importantly: religiously. Sudan is comprised mainly of Muslims, Animist, or Christians. However, more than 90% of the Muslim population resides in the North. This means that Southern Sudan consists mainly of Christians and Animists. Religion became a major factor in the conflict in Sudan.

Although religion may be a factor in Southern Sudan seceding, possibly the most influential factor is oil. The United Nations believes that the separation will signify a final break with the tragedies of the past and is a symbol of future prosperity (English News). Some Christian residents of Southern Sudan believe that the Referendum is promised in the Old Testament as a land called Kush (Al Jazeera). However, in October, President Omar Hassan al-Bashir of Northern Sudan warned that if certain issues were not resolved prior to the revolution, we could see another civil war (Al Jazeera). The issues that Bashir addressed were position of the new border, oil sharing, debt, and Nile River water. Two days later, 12 October, 2010, talks broke down between North and South Sudan (Al Jazeera).

Along with the Southern Sudan Referendum, another referendum, the Abyei Referendum was supposed to occur on the same day. Abyei is a border region between North and South Sudan. The controversy over Abyei that resulted in talks breaking down between North and South Sudan in October was over its population. Abyei is home to a nomadic group of herders for certain portions of the year. The dispute is whether they will be allowed to vote in the Abyei Referendum to determine if Abyei will belong to the North or South. The reason Abyei is such a critical piece of land is due to the oil production. The North's demand for the nomad's to not be considered in the vote and the South's demand for them to be included has resulted in a political stalemate causing the Abyei Referendum to be delayed indefinitely. The South is also accusing the North of relocating thousands of citizens into the northern portion of Abyei to sway the vote.

President Bashir appears to be resigned to losing the South (Downie). He has voiced his opinion that the preferred choice is unity, but the North will respect and assist the South if it chose independence. However, Downie, who believes Bashir's words are a bluff to the international community, warns us of Bashir's current desperate condition. No major issues have been resolved. Downie echoes Bashir's concerns: border demarcation, establishing a currency, defining citizenship, and managing border migration. Despite clashes in the Abyei region that have resulted in at least 30 deaths over the polling days, the majority of voting was been peaceful. It has been declared that Sudan has reached 60% of the population has voted which makes the results of the Referendum legal as per the Southern Sudan Referendum Act of 2009 (Clotey).

In the South, the Referendum does not seem to be the end of struggle. Logistically and administratively, independence will be a major task to maintain stability (Temin). Although Southern Sudan will declare independence, they face issues of internal security. There have been many violent deaths within Southern Sudan: approximately 2,500 in 2009 (Temin). How the Sudan People's Liberation Army handles this conflict internally is yet to be seen. There are very high expectations that life will improve dramatically following the declaration of independence. However, the government is very young, and



progress will take time. Violence along the border region will still be prominent, and small skirmishes have the potential to escalate into larger, uncontrollable conflicts (Temin).

In the North, fallout from the Referendum will also be felt. Following the split, it is expected the North will draft a new Constitution. Along with the border issues that it will share with Southern Sudan, Northern Sudan has other problems. They still have a pending Peace Agreement with the eastern portion of Sudan as well (Temin). Also, there's the issue of Darfur in the western side of the nation. Darfur has kept Sudan in the international media in a negative light for the past number of years. Conflict is still not yet resolved there. Along with these issues are those that President Bashir voiced prior to the referendum: oil and national debt sharing, and the Nile River water. Many of these issues could result in conflict.

Tensions in Sudan are high right now. Sudan has come a long way since the Central Peace Agreement (CPA) ended two decades of civil war. Currently, Southern Sudan cannot see any other option but of that to become their own nation. While independence draws closer, so does conflict with many unresolved issues haunting all Sudanese. Abyei remains disputed territory where blood has already been shed since voting started. Refusal to deal with other major issues with Northern Sudan may prove to result in yet another conflict. Oil sharing could result in war or the prevention thereof. With the North's ability to refine and ship the oil, and the South's ability to acquire the oil, it may create a prosperous relationship.

#### 2.1.4 History of Sudan

The history of Sudan is diverse as its people. Much of Sudan's ancient history is either poorly known or passed on by oral tradition. Evidence of early human activity is scattered throughout Sudan. Early Stone Age or Paleolithic sites suggest dates as early as 250,000 BCE. The techniques of plant and animal domestication began to appear in Sudan around 4000 to 3000 BCE and the Khartoum Neolithic in the central Sudan had emerged.<sup>20</sup> Neolithic groups in Sudan had relations with a wide range of culture in north and northeast Africa, but its closest ties were with the inhabitants of predynastic Egypt.

Northern Sudan's earliest historical record comes from Egyptian sources. These accounts described the land upstream from the Cataracts of the Nile, called *Kush*.<sup>21</sup> The northern locals were independent but strongly influenced by the emerging Egyptian civilization. Then in 2500 BCE, the Egyptians conquered some of northern Nubia and ultimately changed the local Sudanese culture. Officials and priests joined military personnel, merchants, and artisans and settled in the region.<sup>22</sup> Thus, the Egyptian language became commonly used in everyday activities and also many of the upper class Sudanese worshipped Egyptian gods and even built temples for them. Over the centuries trade flourished which included ivory, incense, hides, and carnelian.

As the Egyptian empire weakened, especially after 1070 BCE, Sudanese states reemerged and even became a refuge are for Egyptians fleeing civil war and foreign conquest. By 950 BCE the Sudanese city of Napata had recovered as a major temple of Amun, the god of the most important priesthood. Napata became the capital of Kush and several of its kings conquered Egypt, forming the 25<sup>th</sup> Dynasty and forming a distinctive Egyptian-Kushite culture.<sup>23</sup> The attacks from Egypt by Psammetichus II and by the Roman Petronius encouraged the capital to be moved farther south to Meroë, but did not destroy the state<sup>24</sup>.

Meroë was a vibrant state influenced by Hellenistic, Roman, Ethiopian, and ancient Egyptian ideas. Despite the wide variety of influences it Meroë developed its own cultural traits and may have been the

<sup>20</sup> Richard A. Lobban Jr. Robert S. Kramer, and Carolyn Fluehr-Lobban. *Historical Dictionary of the Sudan*. 3. Lanham, MD: Scarecrow Press Inc., 2002. xxxii.

<sup>21</sup> Ibid.

<sup>22</sup> Ibid.

<sup>23</sup> Lobban., xxxii.

<sup>24</sup> Douglas H. Johnson. *The Root Causes of Sudan's Civil Wars*. Bloomington, IN: Indiana University Press, 2003, 10.

gateway for some Middle Eastern ideas and technologies into Africa. Meroë eventually began to feel pressure from the growing states around it especially King Ezana of Axum, Ethiopia who eventually captured and destroyed the city, ending the kingdom's existence in 350 AD.<sup>25</sup>

The three centuries between the traditional date for the fall of Soba and the Turco-Egyptian conquest of Sudan in 1820-1821 are of great importance in Sudanese history. The movement of people and establishment of new institutions confirmed both the Islamization and Arabization of much of the northern Sudan.<sup>26</sup> During this time the major movement of the Nilotic peoples into the south was completed and the Azande kingdoms were firmly established.

The Funj Sultanate was established in the central and northern Sudan in the early sixteenth century with its capital at Sinnar. The established state followed traditional African patterns of kingship, although Islam rapidly became an important political and cultural force.<sup>27</sup> The sultanate was a major force in the Nile Valley and extended its control on occasion both east into the Red Sea hills and west into Kordofan. The political system experienced a gradual evolution. Sultan Badi II created a slave army in the late seventeenth century that led to tensions with the old Funj aristocracy, who felt threatened. This culminated to the old nobility revolting and deposing the sultan. Localized kingdoms emerged throughout the region, and it was a divided and anarchic Sudan that the Turco-Egyptian forces invaded in 1820.<sup>28</sup>

In Darfur, in western Sudan, other sultanates were also emerging. The Keira Dynasty created a sultanate controlling most of Darfur from the mid-seventeenth century until 1916. The Keira state was Islamic, although it kept many pre-Islamic features. Their reign came to an end when the British defeated them during WWI.<sup>29</sup>

Islam was firmly established in northern Sudan during the Funj and Keira periods. Local schools were created and the great Islamic Sufi orders, *uruq*, gained a firm foothold. This set precedence for how Islam was going to affect the people. It focused around individuals in a personalized, socio-religious order. The religious brotherhood joined the primary ethnic group, kin, and family as the bases for social identity.<sup>30</sup>

The period from the 15<sup>th</sup> to the 19<sup>th</sup> centuries were of crucial importance to the development of the southern regions of Sudan. The largest state to emerge in the southern region during this period was created by a non-Nilotic group, the Azande. They began to enter into southern Sudan in the sixteenth century.<sup>31</sup> It started as a non-cohesive movement and created only a pattern of small, scattered grouping. However in the eighteenth century the Avungara arrived as a new wave of invaders and, as a military aristocracy, succeeded in imposing their authority over the Azande groups. The result was the creation of a well organized and expanding state system with the key being the vigor and rivalry of the royal princes who would leave the center and carve out domains of their own. This led to internal division being minimized and the weaker peoples in surrounding areas being conquered and assimilated.<sup>32</sup>

During the nineteenth century a number of circumstances emerged that began to bring the non-unified peoples and regions together into a single unit called Sudan. The reasons being that economic, religious, and political organizations broadened to countrywide activities that provided elements of integration that would coexist with the elements of diversity.<sup>33</sup> Politically, the conquest of much of Sudan by Turco-

<sup>25</sup> Ruth Iyob, and Gilbert M. Khadiagala. *Sudan: The Elusive Quest for Peace*. Boulder, CO: Lynsee Riener Publishers, 2006, 8.

<sup>26</sup> Stephanie Beswick. *Sudan's Blood Memory: The Legacy of War, Ethnicity, and Slavery in Early South Sudan*. Rochester, NY: University of Rochester Press, 2004, 10.

<sup>27</sup> Jok Madut Jok,. *Sudan: Race, Religion, and Violence*. Oxford: Oneworld Publications, 2007, 24.

<sup>28</sup> Johnson., 14.

<sup>29</sup> Lobban., 3.

<sup>30</sup> Jok., 25.

<sup>31</sup> Johnson., 15.

<sup>32</sup> Johnson., 16.

<sup>33</sup> Don Petterson. *Inside Sudan*. Boulder, CO: Westview Press, 2003, 6.

Egyptian forces brought about a dramatic change. These forces did not face a major local threat until the Mahdist movement in 1881. This movement was started by a religious leader named Muhammad ibn Abdalla, who proclaimed himself as the *mahdi* or the “guided one.” He felt his mission in life was to restore the purity of Islamic society. Originally underestimated by the current government of the Turks, Abdalla and followers gained victory after victory drawing more people to his cause, especially in the north. Eventually Abdalla regained the capital after a long siege in January of 1885.<sup>34</sup>

The British invaded in 1896 after the partition of Africa by the European powers was approved at the Berlin Conference in 1884-1885. The British completed a railway across the Nubian Desert to Abu Hamad and a decisive battle was fought at Karari in September 1899 where over 10,000 Ansar were mowed down by machine guns.<sup>35</sup> In 1899 the Anglo-Egyptian agreement defined the new regime for Sudan. It was devised by Lord Cromer, the British representative in Egypt, which provided for joint Anglo-Egyptian control with flag of each country to be side by side and officials drawn from both nations, called Condominium. At first most governors, inspectors, and officials were drawn from the Egyptian services. However a civil service was soon recruited directly from British universities.

In the early years of the Condominium arrangement the British were mainly occupied with establishing military control and maintaining order. Although there was limited educational development, it created a small but articulate educated class in Sudan. The group began to grow dissatisfied with the way of life and the opportunity for self-rule.<sup>36</sup> This led to a resistance to British rule and they began to shift away from traditional definitions of identity to radical political parties. With these groups gaining in popularity the British were also active trying to create instruments for controlling political developments. They created the Advisory Council for Northern Sudan in 1944 along with a Legislative Assembly in 1948.<sup>37</sup>

Regarding the British's role in Sudan a resolution came about with the Egyptian revolution of 1952. The new Egyptian leadership was more flexible and an agreement was signed in 1953 defining the steps toward Sudanese self-government and self-determination. Elections for a new parliament were held in 1953 and the National Unionist Party, a group of small unionist parties, won a majority.<sup>38</sup> Isma'il al-Azhari thus became the first Sudanese prime minister and the Sudanization of the administration rapidly progressed. Ultimately independence was endorsed by the NUP and on January 1, 1956 the British withdrew and Sudan became an independent state.<sup>39</sup>

One problem that arose was the limited role given to the southerners. They were upset that they were limited in the roles that they could play in the Sudanization of the government and feared northern domination. This led to rumors and mistrust to spread in the South. A mutiny broke out in Equatoria in August of 1955, where many people were killed and southern soldiers fled into exile. Following this period of economic difficulty and political turmoil Major General Ibrahim Abboud overthrew the parliamentary regime in a bloodless coup d'état. Repression, and the inability to handle the southern problem created widespread discontent with Abboud's regime which led to student demonstration, strikes, resistance and other activities that forced the removal of the military regime. It was replaced by a transitional government led by Sirr al-Khatim al-Khalifa. Addressing the problem in the south was high priority for Khalifa so he had the southern leaders returned from exile for a Round Table Conference. However, the two parties hit another stalemate. Northern factional politics reemerged, and thus leaders in Khartoum reverted to solve the problem militarily and the war continued.<sup>40</sup>

---

<sup>34</sup> Beswick, 15.

<sup>35</sup> Johnson, 18.

<sup>36</sup> John O. Voll. Sudan: State and Society in Crisis. Bloomington, IN: University of Rochester Press, 1991, 15.

<sup>37</sup> Ibid., 16.

<sup>38</sup> Lobban., 5.

<sup>39</sup> Johnson., 20.

<sup>40</sup> The New York Times. “Sudan.” 10 January, 2011.

<http://topics.nytimes.com/top/news/international/countriesandterritories/sudan/index.html>. Accessed 20 January, 2011.



Early in 1972, with a relatively unified southern leadership, both parties met in Addis Ababa, Ethiopia and created a peace agreement. Both sides enforced the cease-fire and regional autonomy for the South was recognized in the permanent constitution. Along with that was a broader decentralization of the government in hopes to create structures that would encourage popular participation. Under the Nimeiri regime economic stability was progressing with the nationalization of banks in May 1970, cotton marketing and newspaper that led to a more extensive state socialism.<sup>41</sup>

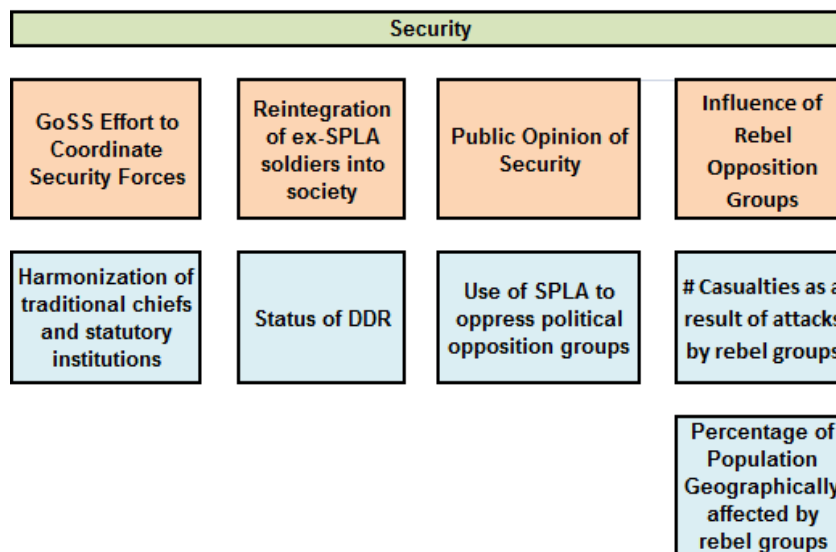
Since the peace treaty was signed in 2005, the south has been semi-autonomous, running most of its own affairs. Southern Sudan is different culturally and religiously from the northern part of the country, a contrast between Arab and Muslim influences in the north and animist and Christian beliefs in the south. The southern leaders have rebuilt towns and invested hundreds of millions, perhaps even billions, in roads, ministries, schools and factories, much of which could be bombed into oblivion in a few days by the north's growing air force.<sup>42</sup> To keep their dreams of independence alive, the southerners seem ready to make concessions. This includes sharing the oil. Oil may ultimately hold Sudan together. Though the south produces about 75 percent of Sudan's crude, it is landlocked, and the pipeline to export the oil runs through the north. Cutting the flow, which provides both north and south with a huge percentage of government revenue, could be a disaster for both sides.<sup>43</sup>

## 2.2 Indicator Research

The background research focused attention on four functions: social, economic, security, and governance. These functions serve as broad topics of interest broken down from the fundamental objective. This method leads to a better organized work effort. Each function was researched in detail to determine the correct conflict indicators for Southern Sudan.

### 2.2.1 Security Function

As shown in Figure 2.1, security focuses on the functions of security force coordination, reintegration of soldiers, public opinion and rebel group influence.



**Figure 2.1 Security Indicators**

<sup>41</sup> Nicholas Coghlan. Far in the Waste Sudan. Canada: McGill-Queen's University Press, 2005. 20.

<sup>42</sup> Iyob, Ruth, and Gilbert M. Khadiagala. Sudan: The Elusive Quest for Peace. Boulder, CO: Lynee Riener Publishers, 2006. 15.

<sup>43</sup> Ibid., 18.

Initially, to understand the security situation in a nation like Southern Sudan that has recently moved away from a twenty-year civil war that ended in 2005, a broader understanding of security related post-conflict indicators is necessary. Scott Feil, a retired Army officer, establishes credibility early in his article by identifying inefficient and incorrect military and civilian aid contributing to insecurity in a post-conflict environment.<sup>44</sup> His argument is that international forces can be used in large-scale efforts to stabilize a nation by enforcing rules and cease-fires, hunting down combatants and securing physical territory through regional efforts. The role of the international military in his eyes is very broad and very involved. The population does not care HOW the security is achieved, only that it is achieved.<sup>45</sup> In order to accomplish security needs, he proposes five pressing categories: unity of effort; integrated security forces; demobilization, demilitarization, and reintegration; regional security and reconstruction of security institutions; and information and intelligence.<sup>46</sup> Although the scope of our project did not analyze the use of international military forces as a deterrent, Feil's five categories of security become vital to our progress in developing the security indicators.

In their article, "Peace, Security and Development in Post-Conflict Environments," Keith Krause and Oliver Juetersonke<sup>47</sup> argue that recent post-conflict reconstruction efforts have been "ad hoc" and "unsystematic". They also believe that the United Nation's policy's towards post-conflict reconstruction is based on interstate conflict; not always INTRASTATE conflict. The UN recognizes that half of all peacekeeping operations fail after 5 years and there is no clear idea of what success or failure actually mean, nor an appropriate timeframe. Post-Conflict Peace Building (PCPB) is realistically analyzed by Krause as a highly ambitious venture. Perhaps a 30% success rate is actually quite good. Contract between state and citizens is security, welfare, and representation. The ideas of social engineering, human security, and piecemeal social engineering are new and relevant to the success of these environments. Although Krause and Juetersonke serve as a critique of how post-conflict programs have been run in the past, they bring up some relevant points in the research of security matters in these environments. The ideas of social and piecemeal social engineering were new, but served to be irrelevant in Southern Sudan. However, human security remained a constant theme throughout the research and modeling process.

As the scope of the project narrowed to focus on internal conflict in Southern Sudan rather than potential conflict between North and Southern Sudan, so did the analysis. Currently, the nation of Sudan is fundamentally and geographically separated into two groups: the Northern Sudanese who are represented by the central government in Khartoum (NCP), and the Southern Sudanese who are represented by the Sudan People's Liberation Movement (SPLM). During the Second Sudanese Civil War, the two sides reached a peace agreement that gave the South the power to organize and hold a referendum. This Sudan Referendum involved a vote that began on January 9, 2011 to remain part of Northern Sudan or to secede and become an independent nation.<sup>48</sup> Like any nation that has a portion seceding, this situation comes with complications. As the polls closed on January 15, 2011, and official results were reported by February 2<sup>nd</sup>, Southern Sudan would become an independent state.<sup>49</sup>

This narrowed focus, and a general understanding of post-conflict environments, led to non-governmental organizations (NGOs) such as the United States Institute of Peace (USIP) and United States Agency for International Development (USAID) that actively do humanitarian work in Sudan. The director for Sudan

---

<sup>44</sup> Scott Feil, "Building Better Foundations: Security in Postconflict Reconstruction." *Washington Quarterly* 25, no.4 (Autumn 2002).  
© 2002 by the Center for Strategic and International Studies and the Massachusetts Institute of Technology.

<sup>45</sup> Ibid.

<sup>46</sup> Ibid.

<sup>47</sup> Security Dialog, accessed at

[http://graduateinstitute.ch/webdav/site/admininst/shared/iheid/800/krause/2005%20mit%20juetersonke%20krause\\_peacebuilding%5B1%5D.pdf](http://graduateinstitute.ch/webdav/site/admininst/shared/iheid/800/krause/2005%20mit%20juetersonke%20krause_peacebuilding%5B1%5D.pdf), Sage Publications, Accessed 17 May 2011.

<sup>48</sup> Richard Downie. "Southern Sudan's Referendum." 5 January 2011. Center for Strategic and International Studies.

<http://csis.org/publication/southern-sudans-referendum>. Accessed 20 January 2011.

<sup>49</sup> BBC Africa. "Clashes during South Sudan Referendum. 10 January 2011. British Broadcasting Corporation.  
<http://www.bbc.co.uk/news/world-africa-12158129>. Accessed 20 January 2011.

inside USIP is Jon Temin. Jon Temin's online resources began to paint a picture for us of the security situation in Southern Sudan: in the South, the Referendum does not seem to be the end of struggle. Logistically and administratively, independence will be a major task to maintain stability.<sup>50</sup> Although Southern Sudan will declare independence, they face issues of internal security. There have been many violent deaths within Southern Sudan: approximately 2,500 in 2009.<sup>51</sup> How the Sudan People's Liberation Army handles this conflict internally is yet to be seen. There are very high expectations that life will improve dramatically following the declaration of independence; however, the government is very young, and progress will take time. Violence along the border region will still be prominent, and small skirmishes have the potential to escalate into larger, uncontrollable conflicts.<sup>52</sup>

A better understanding of the problem in Southern Sudan from these organizations and their resources, led to a research effort entitled: "Measuring Progress in Conflict Environments (MPICE): A Metrics Framework". This book was written as a joint effort by John Agoglia, U.S. Army Peacekeeping and Stability Operations Institute; Michael Dziedzic, USIP; and Barbara Sotirin, U.S. Army Corps of Engineers. MPICE is a collection of outcome-based goals, indicators, and measures of stability in conflicted areas.<sup>53</sup> MPICE's outlook on security establishes that in order to have a safe and secure environment, you must diminish the drivers of conflict and strengthen institutional performance.<sup>54</sup> Under these two goals, MPICE establishes a total of 115 potential indicators. MPICE provided a broad range of indicators, of which we would be able to analyze and determine which, if any, were appropriate for use in Southern Sudan. Ultimately, we tailored some of their indicators to apply to the situation in Southern Sudan.

An understanding of post-conflict indicators, the situation in Southern Sudan, and potential indicators to use led to a personal interview with Jon Temin. This interview led to reviewing an independent research project known as Small Arms Survey located in Geneva, Switzerland. One of the most useful resources for the security section of our research, Small Arms Survey has an international expert staff that serves as the principal international source of information on armed conflict.<sup>55</sup> Small Arms Survey has a branch dedicated to Sudan known as the Sudan Human Security Baseline Assessment (HSBA) which is a research project to objectively track the security and stability of Sudan.<sup>56</sup> HSBA provides reports as well as quantitative data. This assisted in providing the data necessary to complete the project. HSBA's reports on rebel groups, the status of DDR in Southern Sudan, and the SPLA allowed us to develop three of the five security indicators.

### 2.2.2 Governance Function

As a brand new government, the GoSS has many challenges it must address, both immediately and in the long run. The most important aspects pertain to more of the short-term challenges, as the nation needs to stabilize their situation in order to gain the trust, respect, and reputation of both its citizens and the rest of the world<sup>57</sup>. These indicators include maximizing representation and accessibility in and to the government, fairness in the justice system and citizen participation in local government (see Figure 2.2).

---

<sup>50</sup> Jon Temin. Interview Video. Southern and Abyei referendums, and what to look for after the polling is complete. January 2011. United States Institute of Peace. <http://www.usip.org/publications/usip-experts-sudans-referendums>. Accessed 20 January 2011.

<sup>51</sup> Jon Temin. Interview Video. Southern and Abyei referendums, and what to look for after the polling is complete. January 2011. United States Institute of Peace. <http://www.usip.org/publications/usip-experts-sudans-referendums>. Accessed 20 January 2011.

<sup>52</sup> Ibid.

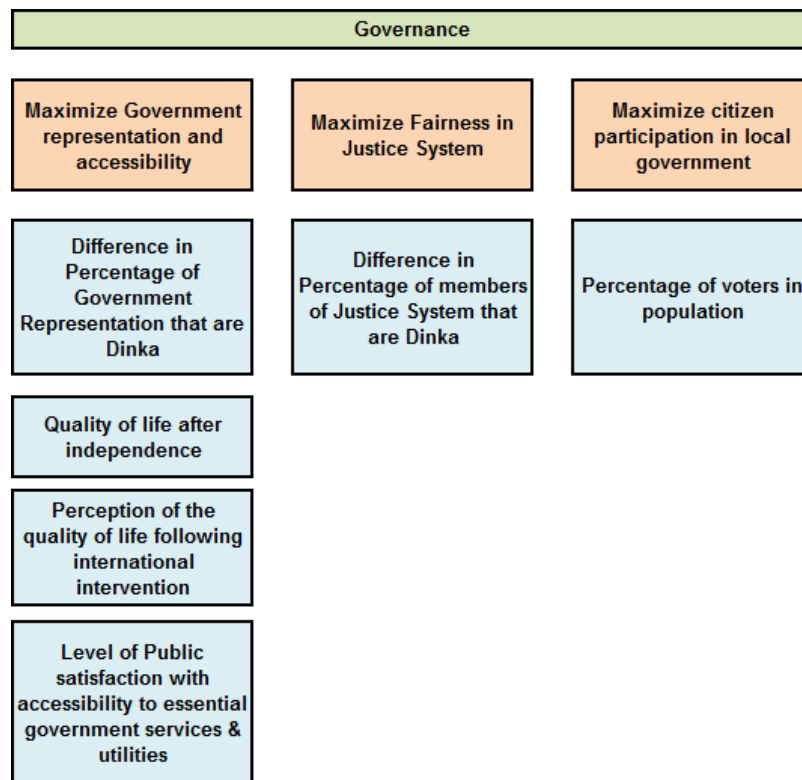
<sup>53</sup> John Agoglia, Michael Dziedzic, and Barbara Sotirin. *Measuring Progress in Conflict Environments (MPICE): A Metrics Framework*. United States Institute of Peace Press. 2010. Pp 1-7.

<sup>54</sup> Ibid., 1

<sup>55</sup> "About the Small Arms Survey", *Small Arms Survey*, The Graduate Institute of International and Development Studies, <http://www.smallarmssurvey.org/about-us/mission.html>

<sup>56</sup> "Sudan Human Security Baseline Assessment," *Small Arms Survey*, The Graduate Institute of International and Development Studies, <http://www.smallarmssurveysudan.org/index.html>

<sup>57</sup> GoSS. "Official Website of Government of Southern Sudan," February 04, 2011. <http://www.goss-online.org>



**Figure 2.2 Governance Indicators**

Prior to the passing of the Referendum, people of Southern Sudan had high hopes and expectations for their new government. After the referendum, if their new government does not deliver on those promises, the faith of the people in the government will greatly deteriorate and the morale will diminish. A major problem in Southern Sudan is limited access to government information. This is especially true for the more volatile regions such as Unity and Darfur.<sup>58</sup> This creates a more difficult environment to acquire raw numbers for statistics in the region. Outright and inherent censorship of the domestic media is a large problem and it is complicated when censorship is coupled with the corruption and the poor security situation in Southern Sudan. This is extremely troubling for Southern Sudan's citizens, since they expect open access to information if they are to live in a democracy. If they don't trust the government, they will not participate in the government thus exacerbating the fragile new government's legitimate position<sup>59</sup>.

A major outstanding issue troubling the new government, even before the referendum was passed, concerned the disputed area of Abyei. The South wanted to resolve the Abyei issue before the split occurred since this is an important territory. Other territory claims mainly center around trade, oil production and revenue. The South wishes to open up more trade opportunities with its neighboring countries, which will help decrease its dependence on oil revenue. Currently, a lot of profit potential is leaving Southern Sudan since the oil is pumped up to Northern Sudan in order to be refined. This creates unease between the two nations since there is not accurate account or documentation of proceeds and gained income.<sup>60</sup>

<sup>58</sup> Jon Temin, Interview. Washington D.C., 16 February 2011.

<sup>59</sup> Ibid

<sup>60</sup> Ibid.

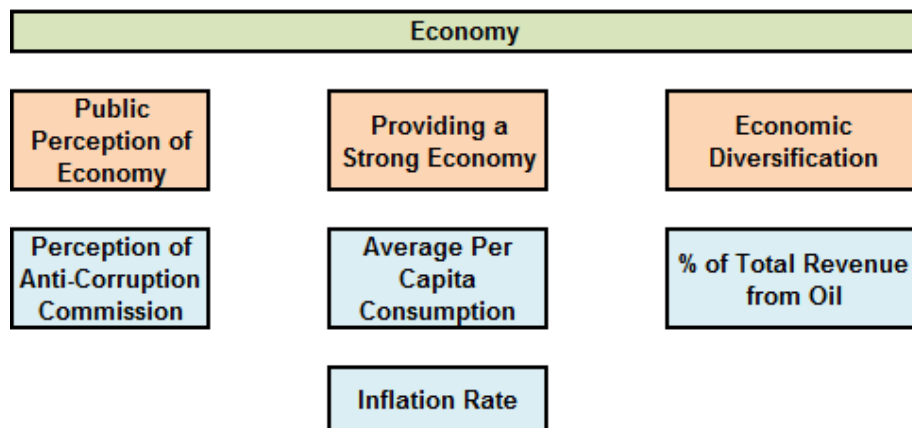
Prior to the passing of the Referendum, people of Southern Sudan had high hopes and expectations for their new government. After the referendum, if their new government does not deliver on these promises, then it is expected that the morale and faith in the government will diminish in the people.

Currently, the Government of Southern Sudan is constructing its new constitution. One issue so far is that the SPLA claim they may want a multi-party political government in the South. It is their hope that this will decrease the apparent and perceived corruption and boost transparency. If multi-party politics exists, the people will have more of a choice on who should represent them.

Finally, the justice system is a major component of any government. The perception of the justice system as fair and just is critical to the survival of the government and a larger extent civil society. Representation of minority groups within the judiciary will go a long way to ensure, in the eyes of the people, that there is fairness in the process and therefore the government<sup>61</sup>.

### 2.2.3 Economic Function

The economic functions that are most relevant for Southern Sudan are public perception of the economy, providing a strong economy and economic diversification (see Figure 2.3).



**Figure 2.3 Economic Indicators**

Understanding the country's economic fundamentals and background are critical to understanding the economic factors that may cause a country to fall into civil war. Sudan historically was an agrarian society based in subsistence farming and included crops such as cotton, and gum. Additionally, Sudan exported domestic animals such as camels, goats and sheep. With the discovery of large oil reserves, the petroleum industry emerged as a major source for economic growth and revenue. Sudan has tried several times, since achieving independence, to implement measures to address the economic turmoil. The public perception of the economy is very poor as inflation continues to deteriorate gains. In recent years the government focus has been on stabilizing the economy<sup>62-63</sup>.

There are two economic classes in Southern Sudan: the rich and the poor. This is a major challenge as the perception of economy is regarded as very poor due to the distribution of wealth between these two groups which leaves the majority of the population without solid economic viability. This is a major

<sup>61</sup> Ibid

<sup>62</sup> Abbadi, Karrar A.B. and Adam E. Ahmed. "Brief Overview of Sudan Economy and Future Prospects for Agricultural Development." Khartoum Food Aid Forum, 6-8 Jun 2006.

<sup>63</sup> Government of Southern Sudan. "Official Website of Government of Southern Sudan," <http://www.goss-online.org/magnoliaPublic/en/about/economicsummary.html>. (cited October 20, 2009).

problem because the distribution of wealth is stretched to the maximum limits with no in-between. In order for those with money to stay in power they will have to pick on the all others to maintain their wealth and status. The Anti-Corruption Commission was therefore constructed to combat this problem. It is a 10-year program that started in 2010 and will work to protect public property and investigate cases of corruption with a view to protecting public property as well as in the private sector and combating administrative malpractices in public institutions<sup>64</sup>. The majority of the people view economic viability as a significant factor to their harmony and well being<sup>65</sup>.

One of the major economic needs in Sudan is capital. To increase capital Sudan must enhance business interest in the country. Sudan is currently ranked as one of the last countries when it comes to ease of doing business. Therefore, major reform is need on all fronts in order to develop a thriving and diversified economy<sup>66</sup>. Diversification is needed as the current percentage of GDP coming from oil is at 98%<sup>67</sup>. This is alarming since a sudden crash in that specific industry could lead the money and spending that was a consequence of the booming industry to turn into debt. Such was the case outlined in the article "Oil revenue in Sudan slashed by 60% in 2009: GoSS," in the *Sudan Tribune*. The article summarizes the oil crash in 2009 that reduced the price of barrels from \$132 to \$35.<sup>68</sup> Several approaches have been suggested to diversify the economy. One method is unique and would allow money to flow directly to where the poverty is greatest. At a micro level, the development of Home Based Enterprises (HBE) is a method to tackle the extreme poverty, but much more effort is needed in this area<sup>69</sup>.

Therefore, the government must also be concerned with easing the country's debt. One way to erase the debt would be for the government to raise inflation and apply taxes, which poses a large threat to the people. Most of the people living outside of the major cities are faced with poverty. The GoSS website cited 100 SDG per month as the average baseline for a person to survive.<sup>70</sup> As one could imagine in such a country as Southern Sudan, most of the spending goes towards only food and shelter. They are living day to day to meet the basic of needs. People within the major cities may be able to meet this baseline but others living outside the city that rely on farming cannot meet that mark. This is because often farmers and tribes turn towards "raids" to obtain live herd and land to try and meet their family needs. Therefore, if people who are already strained are faced with inflation and taxes, they have no choice but to turn towards violence or other means to obtain the necessities to survive.<sup>71</sup>

Economically, Southern Sudan is in a dire situation which will require a concerted and diversified approach to solving its economic situation.

#### 2.2.4 Social Function

The main social indicators in Southern Sudan are religious influence, tribal discord, negative effects of border change and quality of life (see Figure 2.4).

<sup>64</sup> GoSS. "Official Website of Government of Southern Sudan," October 20, 2009. <http://www.goss-online.org/magnoliaPublic/en/about/economicalsummary.html>

<sup>65</sup> Dau, John. Personal Interview. The Lost Boys of Sudan. Washington, D.C., 25 Mar 2011.

<sup>66</sup> Denu-G. Berhanu. "An Agenda for Institutional Reforms in Sudan/South Sudan." *Sudan Economy Research Group Discussion Papers*. Institute for World Economics and International Management. Discussion Paper No. 39, Bremen, Germany, Apr 2011, pp.63.

<sup>67</sup> SSCCE. "Statistical Yearbook for Southern Sudan 2010". 2010.

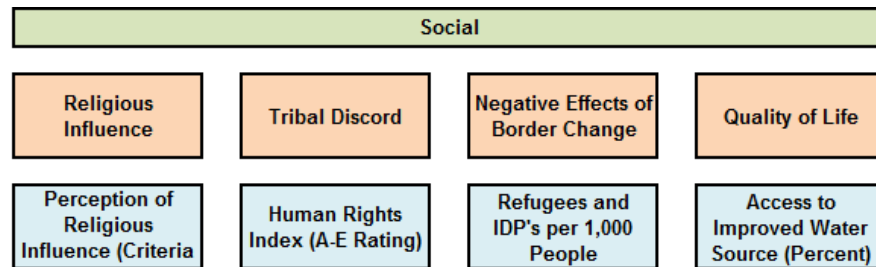
<sup>68</sup> Goss. "Oil revenue in Sudan slashed by 60% in 2009: GoSS," *Sudan Tribune*, March 1, 2010. <http://www.sudantribune.com/Oil-revenue-in-Sudan-slashed-by-60,34298>

<sup>69</sup> Ibrahim, Badr-El-Din. "The Role of Home Based Enterprises (HBE's) in Alleviating Sudanese Urban Poverty and the Effectiveness of Policies and Programs to Promote HBE's." *Sudan Economy Research Group Discussion Papers*. Institute for World Economics and International Management. Discussion Paper No. 34, Bremen, Germany, Dec 2002, pp.36.

<sup>70</sup> GoSS. "Official Website of Government of Southern Sudan," October 20, 2009. <http://www.goss-online.org/magnoliaPublic/en/about/economicalsummary.html>

<sup>71</sup> John Dau. Interview, Washington D.C., March 25, 2011.





**Figure 2.4 Social Indicators**

The influence of the religion in Southern Sudan cannot be understated. Exhaustive literature on the Sudan focuses particular emphasis on the many religious divisions created as a consequence of the confrontation between Islam and Christianity. Islamists have dominated the Sudanese government since 1989 and has supported open oppression of religious freedom. Apostasy, conversion of Muslims to another religion, is punishable by death and covert persecution of Christians is common. The government refuses construction of Roman Catholic churches and openly supports security forces attacks on Christian churches, schools<sup>72</sup>. The effects of this effort by the Islamists have been dramatic. During the past 27 years, with over 2 million casualties, there are more casualties than in Angola, Bosnia, Chechnya, Kosovo, Liberia, the Persian Gulf, Sierra Leone, Somalia and Rwanda combined. Additionally, more than 29 million were left homeless which places traumatic pressure on different regions within Sudan as well as surrounding countries<sup>73</sup>. Finally, the religious competition is not evenly matched with over 70% of the Sudanese population Muslim and less than 30% Christian. The imposition of Sharia Law across the Southern Sudan created a clear distinction between the religions with Muslims at the top, the Christians and remaining others at the bottom<sup>74</sup>.

In Southern Sudan, the power of religion cannot be understated. Sermons have turned political in support of independence from the North. Some have used the bible to push their agenda - Chapter 18 of Isaiah in the bible is believed to be referring specifically to Southern Sudan and their independence<sup>75</sup>. Religious leaders are an effective way of mobilizing support for the referendum<sup>76</sup>. Catholic and Episcopal churches are the predominant Christian religions among the South. Both of these Christian denominations have authority hierarchies. The Catholic hierarchy is headed by Archbishop Paulino Lukudu Loro in Juba<sup>77</sup>. He had voted publicly in the referendum and spoke in favor of separating from Sudan<sup>78</sup>. See Appendix D to see the Catholic Church's hierarchy in Sudan. The New Sudan Council of Churches brings the other Christian denominations together to perform social services as well as promote peace<sup>79</sup>. Vice President Machar had used a prayer breakfast as a place to promote peace with the rebel

<sup>72</sup> International Crisis Group. *God, Oil and Country: Changing the Logic of War in Sudan*. Brussels: IGC Press, 2002, p 93-98.

<sup>73</sup> Martin, Randolph. "Sudan's Perfect War." *Foreign Affairs* (Mar/Apr 2002), Vol. 81, No. 2: 111.

<sup>74</sup> Vale, Richard J. "Is the Sudan Conflict Best Understood in Terms of Race, Religion, or Regionalism?" e-International Relations, WordPress, <http://www.e-ir.info/?p=8854>, (cited May 2011).

<sup>75</sup> Kauffman, Casey. "Religion Influences Sudan Vote: Some Believe that the Referendum is a Gift from God Which will Lead to South's Independence." Aljazeera, 4 Jan. 2011. <http://english.aljazeera.net/video/africa/2011/01/20111461538831470.html> (accessed March 2011).

<sup>76</sup> Mutasa, Haru. "South Sudan Plagued by War Fears: As Region Prepares for January Referendum, Many Fear Return of Conflict to the Country." Aljazeera, 16 Oct. 2010. <http://english.aljazeera.net/video/africa/2010/10/20101015185026585696.html> (accessed March 2011).

<sup>77</sup> "Structured View of Bishops: Sudan." Catholic Hierarchy, 21 Feb. 2011. <http://www.catholic-hierarchy.org/country/bsdqv.html> (accessed March 2011).

<sup>78</sup> "Churches Call for South Sudan to Vote for Independence." BBC, 13 July 2010. <http://www.bbc.co.uk/news/10619325> (accessed April 2011).

<sup>79</sup> "Sudan: Race and Religion in Civil War." Georgetown University: Berkley Center for Religion, Peace, & World Affairs, [berkeleycenter.georgetown.edu](http://berkeleycenter.georgetown.edu) (accessed April 2011).

fighters<sup>80</sup>. The influence of Christianity is a source of unity and peace among the South and can be used to deter the possibility of conflict.

Another important social indicator is tribal discord. Tribal discord is also understood as racial conflict. Some insist that the underlying challenges in Sudan are racially based and are the main factor in determining conflict whereas religion is added as an additional component to the race issue<sup>81</sup>. There is also a historical slavery conflict between the north and the south based upon tribal/racial lines. This is a very deep-rooted problem without an easy solution. Tribes are not satisfied with the Dinka majority in the SPLA and the human rights violations being forced upon them. In Country Compass, one of the indicators they measured was the Human Rights Index, an indicator showing the degree to which countries experience government-induced violence against their own population<sup>82</sup>. This indicator matched what was going on between the minority tribes and the SPLA/Dinka. Supporting this indicator is Sudan's ranking as the number one violator of human rights based upon the Human Rights Index averaged over the past ten years. Appendix E provides examples of different nations during different times that qualify into each of the five levels of the Human Rights Index.

Tribal violence is not limited to minority tribes fighting the Dinka. Small tribes fight each other as well. Raids over cattle are frequent as well as competition for fresh water sources<sup>83</sup>. This is a key reason for tribal violence. It is not simply limited to Sudan either. Other countries around the horn of Africa have also experienced violence due to scarce fresh water sources, including Kenya and Ethiopia<sup>84</sup>. The most practical way of measuring this indicator was to look at the percentage of the total population with access to improved water sources in these nations and determine the point at which this becomes a problem<sup>85</sup>. Appendix F indicates other areas in the Horn of Africa that have had developments in conflict over water sources in the past decade.

Finally, the institutions of marriage and work are cut along racial lines as well. Arabs marry southern girls regardless of race and religion whereas Arabs will not allow their daughters to marry Southern men regardless of race and religion<sup>86</sup>.

The effects of border change have a tremendous impact on the population mainly due to the impact of refugees. In particular, the Abyei region of Southern Sudan is disputed between the North and South which includes the historical grazing areas of several different tribes as well as rich oil reserves. Just recently, the North has pushed into Abyei to claim more territory which has displaced the Agok people and forced them south<sup>87</sup>. Refugees returning home to Southern Sudan from the North have nothing and are attempting to reintegrate themselves into a population that is also competing for scarce resources. Disputes over border division are huge problems. For example, the town of Quek is composed of half black Shilluks in the South and Arab Sulain in the North. Both sides insist the entire town belongs to them. The border changes also create more refugees and internally displaced people. The issue carrying the most weight is the SPLA using Dinka to combat tribes in the Shilluk kingdom in an attempt to succeed in their disarmament program. The minority tribes want to keep their weapons because they believe that the majority SPLA party and Dinka tribes are working together to retain power and take their land. The

<sup>80</sup> "Machar Opposed to an all-out War Against Forces of George Athor." Sudan Tribune, 7 March 2011.

<sup>81</sup> [://www.sudantribune.com/Machar-opposes-to-all-out-war,38202](http://www.sudantribune.com/Machar-opposes-to-all-out-war,38202) (accessed March 2011).

<sup>82</sup> Makau, Mutua. "Racism at the Root of Sudan's Darfur Crisis." *The Christian Science Monitor*, 14 July 2004.

<sup>83</sup> USAID: Country Compass. <http://www.countrycompass.com/> (accessed March 2011).

<sup>84</sup> Analyzing Tribal Conflicts in Southern Sudan and GoSS Failure in Dealing with the Problem (3 February, 2010).

<sup>85</sup> "When the Water Ends: Africa's Climate Conflicts." Yale Environment 360.

[http://e360.yale.edu/feature/when\\_the\\_water\\_ends\\_africas\\_climate\\_conflicts/2331/](http://e360.yale.edu/feature/when_the_water_ends_africas_climate_conflicts/2331/) (accessed April 2011).

<sup>86</sup> USAID: Country Compass. <http://www.countrycompass.com/> (accessed March 2011).

<sup>87</sup> Yokwe, Eluzai M., "Conflict Resolution in the Sudan: A Case Study of Intolerance in Contemporary African Societies." Department of Linguistics and African Languages. University of Nairobi, Kenya.

<http://archive.lib.msu.edu/DMC/African%20Journals/pdfs/africa%20media%20review/vol11no3/jamr011003006.pdf> (cited May 2011).

<sup>87</sup> Fick, Maggie. "South Sudan Threatens to Retaliate Against North in Border Dispute." *The Christian Science Monitor*, 24 May 2011.



SPLA raped and looted villages and the rebel armies have fought back. The SPLA however, is claiming that Khartoum is arming the rebels to ensure Southern Sudan's independence from the North fails. When village elders and the Shilluk king met with SPLA leaders, SPLA General Matur Chuot Dhol, the 7<sup>th</sup> Division Commander blamed the problems on the tribes for not cooperating with the disarmament while the tribes are claiming self-defense<sup>88</sup>.

Southern Sudan is filled with both refugees returning and new refugees being displaced in extremely high numbers which is an effect of border change. In 2010 alone, there were over 10,000 people were displaced by SPLA looting<sup>89</sup>, 400,000 due to tribal warfare, and 50,000 due to flooding<sup>90</sup>. The United Nations High Commissioner for Refugees gives statistics on nations with refugee problems. Sudan ranks highest with 6 million. See Appendices B and C for data on refugees and IDPs in Southern Sudan.

The quality of life indicator for Southern Sudan is manifested in the concept of "water access". Tribes have been fighting each other for centuries over grazing land, water points and land. Water as a quality of life indicator is very telling and provides great insight to how the people are feeling<sup>91</sup>. The primary source of water in Southern Sudan is boreholes and small wells, which makes the conflict over water more important, as these are limited and produce small amounts of water at any given location.

---

<sup>88</sup> Welsh, Ying. "Degrees of Separation: People and Power Travels the Nile into Southern Sudan to Discover what Divides the Sudanese." Aljazeera, 29 Dec. 2010.

<http://english.aljazeera.net/programmes/peopleandpower/2010/12/2010122964716111620.html> (cited March 2010).

<sup>89</sup> Welsh, May Ying. "Sudan: Transcending Tribe." Aljazeera,

[http://english.aljazeera.net/photo\\_galleries/africa/201111010324526960.html](http://english.aljazeera.net/photo_galleries/africa/201111010324526960.html) (accessed April 2011).

<sup>90</sup> "Sudan: Durable Solutions Elusive as Southern IDPs Return and Darfur Remains Tense." Internal Displacement Monitoring Centre, 31 Dec. 2010. <http://www.internal-displacement.org/countries/sudan> (accessed April 2011).

<sup>91</sup> Riaka, Lago G. "Analyzing Tribal Conflicts in Southern Sudan and GOSS Failure in Dealing with the Problem."

Sudaneseonline.com, 3 Feb 2010,

[http://www.sudaneseonline.com/en216/publish/Articles\\_and\\_Analyses\\_12/Analyzing\\_tribal\\_conflicts\\_in\\_southern\\_Sudan\\_and\\_GOSS\\_failure\\_in\\_dealing\\_with\\_the\\_problem\\_By\\_Lago\\_Gatjal\\_Riaka\\_USA\\_printer.shtml](http://www.sudaneseonline.com/en216/publish/Articles_and_Analyses_12/Analyzing_tribal_conflicts_in_southern_Sudan_and_GOSS_failure_in_dealing_with_the_problem_By_Lago_Gatjal_Riaka_USA_printer.shtml) (cited May 2011)

## Chapter 3 Products

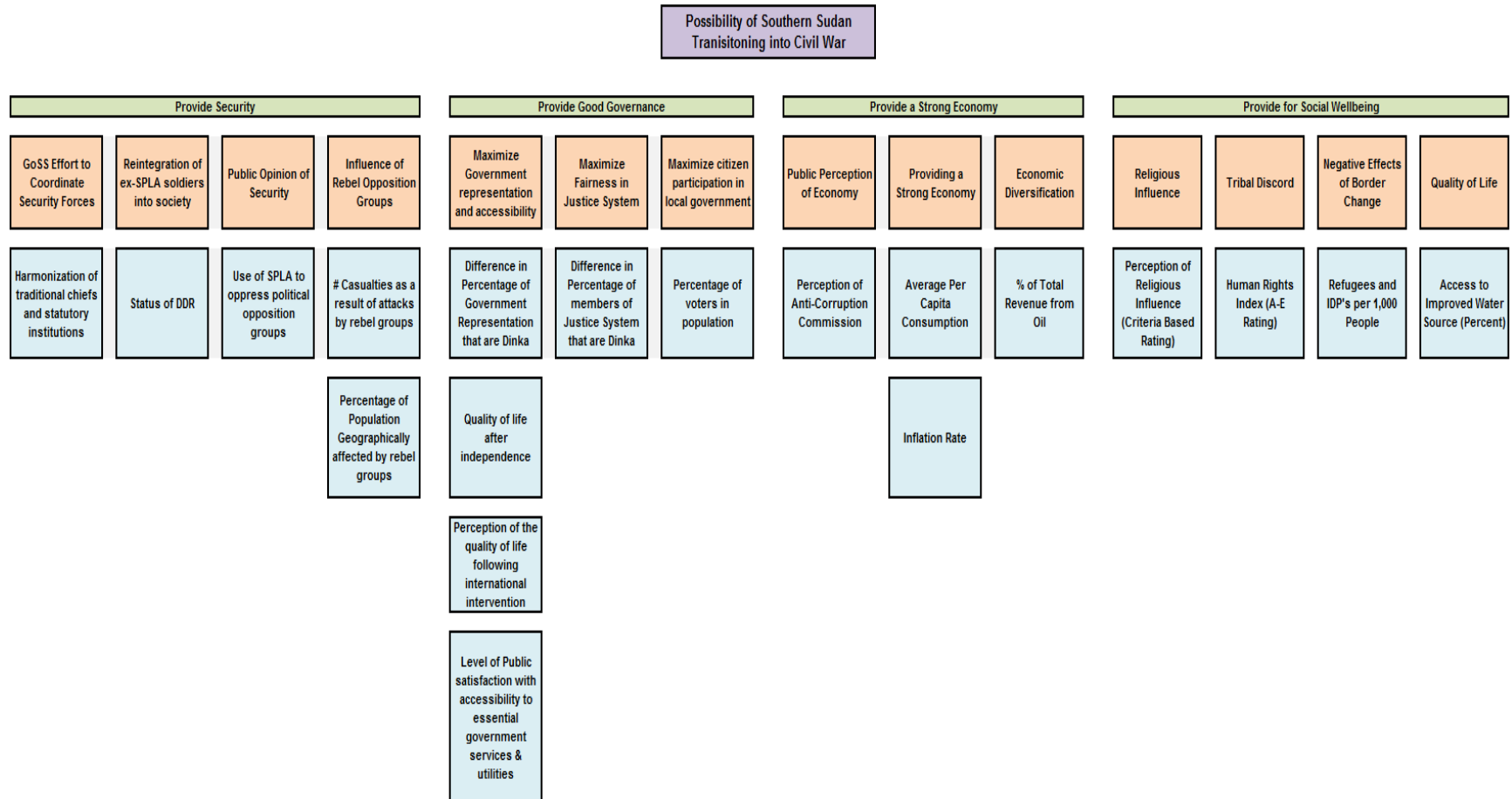
### 3.1 Qualitative Value Hierarchy

After researching what functions support the fundamental objective and which indicators affected each function, we combined the four sections into an encompassing multi-objective value analysis model.

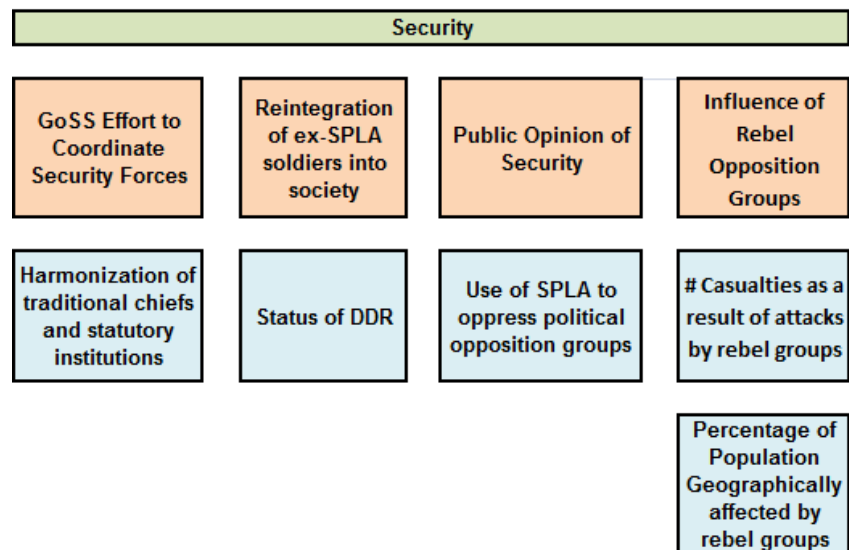
In this multi-objective value analysis process, the model's primary use is the ranking and scoring of conflict measures. The fundamental objective of this research is to predict if Southern Sudan will or will not transition into civil war. The four functions (security, governance, economy, and social) are broken down into objectives that are broken into value measures. Figure 3.1 represents the project's qualitative value hierarchy.

Figures 3.2 through 3.5 show the four functions and corresponding value measures that support the fundamental objective. The evaluation criteria presented here are representative critical tasks that are performed during reconstruction operations. Their scope is not meant to be specific, as the execution of each task is situationally dependent.

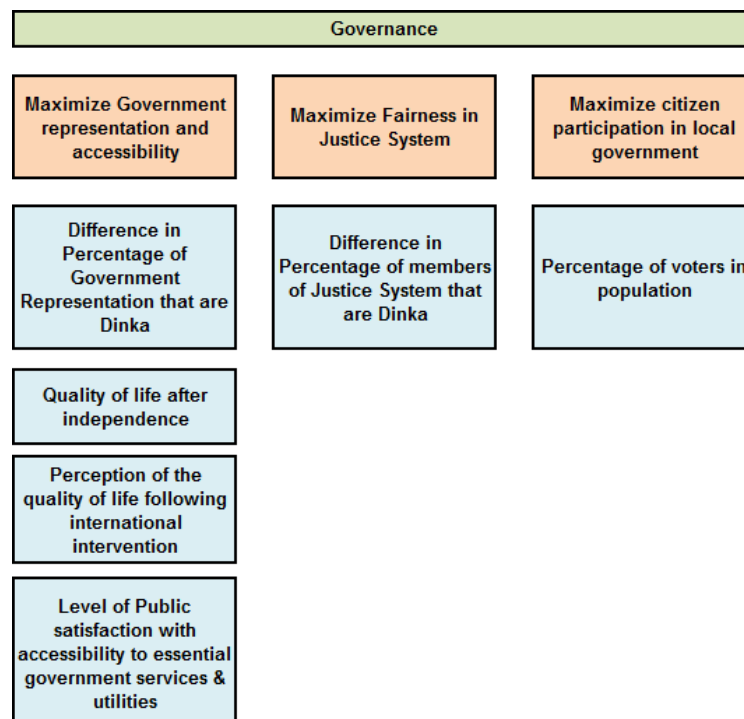
As the evaluation criteria are dependent upon the situation and type environment, they are not presently assigned local weights in the value hierarchy model. It is not predetermined which, if any, of these evaluation criteria will be a factor so they cannot be assigned "constant" local weights in the model. Appropriate evaluation criteria and local weights will need to be determined, based on current information, when applying the model. We used mainly the information presented in Chapter 3 to develop our functions used to assess projects.



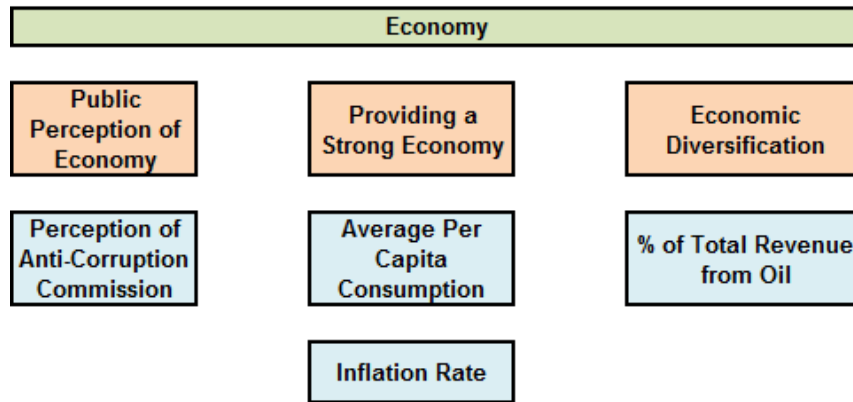
**Figure 3.1 Qualitative Value Hierarch**



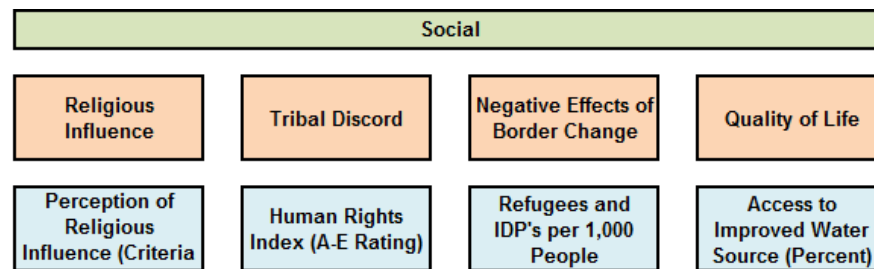
**Figure 3.2 Security Function**



**Figure 3.3 Governance Function**



**Figure 3.4 Economy Function**



**Figure 3.5 Social Function**

### 3.2 Quantitative Value Model

Multi-objective value analysis uses an overall value function which combines the multiple evaluation measures into a single measure of the overall value of each evaluation alternative or portfolio of projects. Thus, different mixes of projects in a portfolio may be compared to determine the appropriate mix for maximizing value. Multi-objective value analysis is useful for structuring the judgments used in assessing the value of projects that comprise a reconstruction portfolio in an organization with multiple and conflicting objectives. Multi-objective value analysis methods are based upon structured objectives, evaluation measures, value functions, and weights.<sup>1</sup>

The overall value function has the form

$$\left[ \text{Box with a red X} \right] \quad (3.1)$$

where  $N$  = the number of projects in the portfolio,  $\omega_g$  = the evaluation measure local weight, and  $V(x_n)$  = the value or score assigned to project  $x$  for each evaluation measure. In this function, it is assumed that individual projects impact only one evaluation measure.

When  $\omega_g$  has been determined for the current situation, the model can be used to find the right mix of projects to maximize value or support a combination of core outcomes within a fixed budget portfolio. This is where the model can show how to maximize overall value. Simply, the mix of projects with the highest

<sup>1</sup> Kirkwood, C., *Strategic Decision Making: Multi-objective Decision Analysis with Spreadsheets*, Belmont, CA: Wadsworth Publishing Company, 1997.

overall score adds the most value. We can then view projects as a function of cost or some other variable to make logical and defensible decisions.

When using multi-objective value analysis a structured approach must be taken to develop the weights, objectives and functions. In this paper we presented objectives and functions based upon the experience of the authors, a literature review, and input from some subject matter experts. We then surveyed a group with experience in reconstruction to develop the weights. This provides a realistic model to demonstrate the utility of this approach. This top down approach provides a starting point for allocating resources. Ideally, stakeholders should be involved at all levels. A structured decision process involving funding agencies and local governments should be used to develop objectives and functions. One such methodology is Value Focused Thinking<sup>2</sup>. Note that function should always be quantifiable and measurable. Once these objectives have been developed, the task of assigning weights can begin. Again, some type of structured decision methodology should be used with stakeholders at all levels providing input. In general, there is often very little disagreement on the objectives, functions, and how to quantify the functions. However, when assigning the weights are when stakeholder interests are reflected. For example, one group of stakeholders might place a high value upon security. Whereas another group of stakeholders such as the local populous would place a higher weight on meeting basic needs. Stakeholder buy in is critical with all parties agreeing to the framework. Sensitivity analysis can play a key role here to show how varying the weights over different ranges can have little or major impact on the objective function.

At the top level, there is the fundamental objective – “Possibility of Southern Sudan Transitioning to Civil War.” Supporting the fundamental objective are the four functions: security, governance, economy, and social. The indicators are listed under those functions. The value measures for each of these functions are found in appendices G – J. The research we conducted allowed us to determine which objectives are most crucial to the stability and development of Southern Sudan.

The model includes all of the indicators that we deemed most important to predicting Southern Sudan's likelihood of returning to conflict, but not all of the indicators are directly quantifiable. For those indicators that are not possible to measure, they did not get included in our final prediction model, since there was no way to input data for those indicators. However, they remain in our Qualitative Value Model so that the stakeholder is reminded of their presence.

### 3.2 Systemigram

Upon completion of our literature research and stakeholder analysis, we broke our conflict into four functions: security, economic, social, and governance. These functions serve as broad topics of interest by which specific indicators are developed. Although these four functions do provide us a basic understanding of the problem, they not clearly or distinctly show how each element relates to other elements. While attempting to model all relationships between security, economy, social and governance sectors of Southern Sudan, we needed a tool to help construct those relationships in a clear manner. We used a Systemigram (Appendix K) to help us understand the relationships between each of the functions. By specifically identifying the most important elements within each of the four functions, the relationships became much more understandable. There are two primary users for this tool; our team, who is researching the individual post-conflict indicators, and the USAFRICOM analysts who will refine our indicators and the weighted value model. The benefit of the Systemigram is that the client can easily search for how nodes are interconnected and influence each other. The benefit of the Systemigram is that the client is able to easily search for how nodes are connected and influence each other.

In order to evaluate the current stability situation in Southern Sudan and provide an accurate model, our team did extensive background research on the concept of post-conflict indicators. This research pointed

---

<sup>2</sup> Keeney, Ralph L., *Value Focused Thinking*, Harvard University Press, Cambridge, Massachusetts, 1992

led to organizations such as USAID, USIP, the North-South Institute, and other “Western” influenced sources. However, we broadened our research base by gathering information from Sudanese organizations as well as other African perspectives. Our breakthrough source of information for the project came when we met John Dau. John Dau, or Dhieu Deng Leek, is one of the original Lost Boys of Sudan and stays involved with Southern Sudan related issues. The Lost Boys of Sudan is a group of approximately 10,000 young refugees who fled the violence in Sudan. Mr. Dau has also opened a clinic in Southern Sudan and works to improve the quality of life in his home country. Mr. Dau was able to give us an accurate perspective on the problem at hand: can Southern Sudan survive as a sovereign nation, or will it fall into civil war?

### 3.2.1 Combined Systemigram

Appendix K is the overall, combined Systemigram that contains all four sectors, all functions and indicators. It is useful for displaying all the major elements that affect stability for Southern Sudan, allowing the user to see how every node fits into the overall diagram. Appendix L contains the functions and objectives without the indicators.

### 3.2.2 Security Systemigram

The current security situation in Southern Sudan is very volatile. There are multiple armed rebel groups that are a major concern to the well-being of the Government of Southern Sudan (GoSS). Additionally, there is an underdeveloped police force (SSPS), and the Sudanese People’s Liberation Army (SPLA) is undergoing a DDR program. The effectiveness of this program as well as the development of a legitimate police force will have a major impact on the future of security in Southern Sudan. Along with these major topics, there is cattle rustling, tribal differences, and violence along the border with North Sudan. The border violence is concerning, but our focus is on a civil war within Southern Sudan. The government’s ability to provide security for its citizens is extremely important in becoming a sovereign state. If the government cannot provide this security, the population will turn to other means to get it and potentially overthrow the government. See appendix M – Security Systemigram.

#### Number of Casualties as a Result of Attacks by Rebel Groups

In an interview with John Dau, the first thing he said to us, before being asked any questions was that the number one issue in Southern Sudan’s ability to succeed as a sovereign state is the existence of rebel groups.<sup>3</sup> Mr. Dau actually referred to these rebel groups as “proxy armies”, as he and many other Southern Sudanese believe that the rebel groups are funded and supported by Khartoum in an attempt to undermine the legitimacy of Juba’s government.<sup>4</sup> The perception of the Southern Sudanese people that the North is responsible for these insurrections is both hard to measure and difficult to prove.<sup>5</sup> Although important, the effect of these rebel groups would have to be measured in a different way. Undoubtedly, the most important factor of a nation going to civil war is the impact of actions by both the government and counter-government groups on the population.

With the existence of rebel groups clashing with government forces, the conflicts produce casualties. Because of the unavailability of a breakdown of casualties by type (civilians, armed combatants, men, women, children, etc.) we have chosen to base this indicator solely on the number of casualties. This indicator has both strengths and weaknesses. The strengths are that it is a quantifiable measure that directly shows an impact on the population, is already tracked by Small Arms Survey, can be adjusted monthly, and can be updated once more sophisticated statistics can be collected. The weaknesses are that it does not show a breakdown of the casualties by type. Also, a single event may cause more casualties in a specific region, and this is also not shown by this indicator.

---

<sup>3</sup> John Dau. Interview, Washington D.C., March 25, 2011.

<sup>4</sup> Ibid.

<sup>5</sup> John Temin. Interview, USIP, Washington D.C., February, 2011.



Now that we established the number of casualties as an indicator, in the type of model that we used, we developed a scale for each indicator that translated raw data (deaths per month) into a universal scale of value (100 indicating most likely to go to conflict, 0 indicating least likely). In order to determine the value for this scale, we decided to look at current wars to determine what kind of casualties a modern war produces. Looking at the statistics of the war in Afghanistan, the beginning of the war (2006) saw a casualty rate of 404 deaths per month (a combination of civilian, Taliban, ANA, and coalition forces). We also looked at the current data in Southern Sudan from 2010, which translated to approximately 76 deaths per month. Due to the current instability of Southern Sudan, we looked at this of being the midway mark. Because Afghanistan is undoubtedly a nation at war, we used 400 as the extreme “100” mark. If Southern Sudan reaches this number, it will be classified as fighting a civil war.

Data Collection Source: Small Arms Survey, UNMIS, Monthly

### Percentage of Population Geographically Affected by Rebel Groups

In an interview with John Dau, the first thing he said to us, before being asked any questions was that the number one issue in Southern Sudan’s ability to succeed as a sovereign state is the existence of rebel groups.<sup>6</sup> Mr. Dau actually referred to these rebel groups as “proxy armies”, as he and many other Southern Sudanese believe that the rebel groups are funded and supported by Khartoum in an attempt to undermine the legitimacy of Juba’s government.<sup>7</sup> The perception of the Southern Sudanese people that the North is responsible for these insurrections is both hard to measure and difficult to prove.<sup>8</sup> Although important, the effect of these rebel groups would have to be measured in a different way. Undoubtedly, the most important factor of a nation going to civil war is the impact of actions by both the government and counter-government groups on the population.

One way to analyze the effect a rebel group has on the population is to look at the physical regions that the group operates in and determine how much of the overall population is actually influenced by these groups. If a population won’t accept a rebel group, then they cannot continue to exist in that region. Therefore, the conclusion can be drawn that if the rebel group exists in a region, they are influencing the population. The background of these current rebel groups is also a key indicator that their presence is going to influence the attitudes of the local populations towards the national government. Back during the civil war between North and Southern Sudan, the SPLA was the main security force fighting the North. However, there was also the existence of “OAGs” or Other Armed Groups. These OAGs operated independently, had their own rank structure, and did well defending the population.<sup>9</sup> After the CPA, these OAGs were reformed into the SPLA. This caused rank inflation, and conflict within the organization. What we are witnessing now is that some of these leaders of the OAGs (such as George Athor and Peter Gatdet) are defecting away from the SPLA for various reasons including the feeling of being snubbed for positions. This also gives legitimacy to the assumption that in the regions they are operating, the population is loyal to them.<sup>10</sup>

The decision then must be made how to scale the values of percentage of population affected and how to collect the data. We could find no real data on what percentage of the population is required for the central national government to lose control. However, if you look at conflicts such as Vietnam, Libya, and even Afghanistan, it will show that a very small portion of the population has caused a very serious conflict. Because of this, we have scaled the percentages as 0 being least likely and 25% being most likely with a sharp increase to 15% and small increments to 25% from there. As for collecting data, Small Arms Survey from Geneva, Switzerland is tracking armed groups in Southern Sudan and their influence areas. A comparison of their most recent map with the census of Southern Sudan from 2010 allowed us

---

<sup>6</sup> John Dau. Interview, Washington D.C., March 25, 2011.

<sup>7</sup> Ibid.

<sup>8</sup> John Temin, Interview, USIP Washington D.C., February 2011.

<sup>9</sup> Dau.

<sup>10</sup> Ibid.



to do some basic math to determine the total population currently affected by rebel groups in Southern Sudan.

Data Collection Source: Maps provided by Small Arms Survey and Statistical Yearbook for Southern Sudan 2010 (Southern Sudan Centre for Census Statistics and Evaluation), Annually

### Current Status of DDR Program in Southern Sudan

Disarmament, Demobilization, and Reintegration is a very common security measure taken in a post-conflict state. Because Southern Sudan has been at civil war for the past twenty years, and has recently become a somewhat peaceful state, they have decided, in conjunction with the North, that a DDR Program was necessary during the 2005 CPA. Ryan Nichols of Small Arms Survey notes that DDR programs implemented even in the most stable, predictable, and secure contexts are complex and can face tremendous technical, logistical, financial, social, and political hurdles.<sup>11</sup> Therefore, it can be concluded that the DDR program in Sudan will not be without its setbacks and challenges.

The importance of this program cannot be understated. The plan is to take 180,000 SPLA soldiers and reintegrate them into society.<sup>12</sup> This includes providing them financial assistance while they transition as well as providing them training so that they can succeed in a separate career choice. One of the side effects of an effective DDR program would be less soldiers defecting to rebel groups. If the men can be offered legitimate jobs that are able to support them and their families, then they will not need the money of the defected generals who run these rebel groups.

An entire assessment of the current DDR program in Southern Sudan is provided by the Small Arms Survey, based in Geneva, Switzerland. It should be understood that an effective DDR program is fueled by an effective economy, bolstered by effective personal security, and hindered by the existence of rebel groups. There are many factors that contribute to the effectiveness of DDR, and that an effective DDR program contributes to.

Measuring a DDR program is difficult because there are many moving parts, and not all of them are indicative of the success of the program. Additionally, Southern Sudan's accountability of their program is poor at best. Therefore, we decided that the best way in which to measure the DDR Program's status was to use a bar chart for value (0 being least likely to go to conflict, 100 being most likely) with varying degrees of completion of the DDR program as scenarios:

- DDR completed; no issues outstanding; no armed groups pose threat (0) – This measure's purpose is to serve as a "mission accomplished" scenario. An effective DDR program will be completed with the SPLA downsized to the desired size, and the ex-soldiers reintegrated into society and contributing to economic well-being. We are assuming that this will cause the armed groups to also disband due to the lack of recruitment abilities.
- Implementation largely completed with remaining 25% coming through DD process; institutional arrangements and government policy support continued progress (20) – This scenario is proof a successful program that is not quite finished, but is well on its way. It is intended to show a very low possibility of conflict.
- DD well underway with 25-75% combatant population participating; R programs functioning; government increasingly active (40) – This scenario shows a significant drop in the possibility of conflict due to an ineffective program. Once a program is in place with good accountability and a good future, it is more likely to continue to succeed.
- DD plans being implemented with 10-25% combatant population being processed; still dependent on international support (60) – The key to this scenario is that the process has started, but is not autonomous. One of the main goals of any international NGO is to develop the capacity of the government they are assisting. If Southern Sudan cannot complete this program itself, it is not

<sup>11</sup> Ryan Nichols, "DDR in Sudan: Too Little, Too Late?" *Small Arms Survey Sudan*. February, 2011.

<sup>12</sup> Ibid.

the worst thing in the world, but it is an indicator of a weak government that may not be able to endure the program when international organizations leave.

- Plans for DD being prepared, but not yet implemented; internationally driven; R not yet successful (80) – This scenario's purpose is to indicate a scenario where the institutions have been set in place, but action has not yet been taken. This scenario can also represent a resurgence of the SPLA after the DDR program.
- Conflict is ongoing, ineffective plans for demobilization or reintegration of combatants (100) – This scenario also includes an ineffective DDR program. For example, if the reintegration program is not committed to by the central government, then more demobilized soldiers will turn to rebel groups and defect against the government. Because this is the situation Southern Sudan is trying to prevent, the program would be considered ineffective.

Data Collection Source: IUNDDR Unit (UN), Small Arms Survey, NDDRC (Sudanese), Monthly

#### Use of SPLA to Oppress Political Opposition Groups

The SPLA was the defense force for Southern Sudan during the North-South civil war, and the SPLM (Sudan People's Liberation Movement) is the political side to the security force. Although the SPLA is primarily Dinka, it also contains the second largest tribe in Southern Sudan, the Nuer. Historically, these two ethnic groups have not gotten along (the Nuer actually killed many Dinka in the early 1990s). However, it is not the struggle between the Dinka and Nuer that this indicator focuses on.

The SPLM-DC is the SPLM-Democratic Change. Although they seem similar, the SPLM and SPLM-DC are entirely different entities with entirely different goals and political drives. As was stated earlier, the SPLA (army of the SPLM) was the main security force for all of Southern Sudan during the civil war. Therefore, the SPLM has been in power in Southern Sudan ever since the CPA in 2005. Recently fighting has broken out in Unity and Upper Nile States that has been attributed to the SPLA fighting the SPLM-DC. The SPLM-DC claims that it does not have a security force and is purely a political organization.<sup>13</sup>

The Small Arms Survey, an organization based in Geneva, Switzerland, is following an ongoing conflict in the Upper Nile state between the SPLA and the Shilluk people. Small Arms Survey states that the conflict began following the SPLA suppression of four recently elected Parliament members from the SPLM-DC.<sup>14</sup> This animosity stems from the Shilluk tribesman and political leader Lam Akol of the SPLM-DC. The SPLA/M fears that Lam's connections with the North, complaints about corruption, and that he poses a threat to their dominance in the South's government.

Although the oppression of political opposition with a nation's army is a serious concern (as noted by MPICE), it is possible for a state to function with only one party.<sup>15</sup> It is because of these two facts that we believe that this indicator is important enough to monitor, but does not carry much weight in the potential for a civil war within Southern Sudan. Therefore, we are limiting this indicator to a "Yes/No" metric. This will allow AFRICOM to track this oppression and the potential snowball effect that it holds.

Data Collection Source: Small Arms Survey, Monthly

#### Harmonization of Boma Chiefs, SSPS, SPLA

The concept behind this indicator stems from research done by the North-South Institute. The North-South Institute is a Canada-based independent research organization that provides research for a

<sup>13</sup> "Sudan People's Liberation Movement – Democratic Change: Official Website." <<http://www.splm-dc.org/>>

<sup>14</sup> "SPLM/A – Shilluk Conflict in Upper Nile" *Small Arms Survey Sudan*, <<http://www.smallarmssurveysudan.org/pdfs/facts-figures/armed-groups/southern-sudan/emerging/HSBA-Armed-Groups-Shilluk-Conflict.pdf>>

<sup>15</sup> *Measuring Progress in Conflict Environments: A Metrics Framework*. USIP Press, Washington D.C., 2010.

multitude of organizations. They worked with the Centre for Peace and Development Studies (a Sudan-based organization) to produce a policy document on Police Reform in Southern Sudan.<sup>16</sup>

The policy document outlines the current security and police situation in Southern Sudan. They have collected survey data on many important issues in Southern Sudan. The survey was given at seven locations in six of the ten states of Southern Sudan. However, the survey only contains samples from 850 total households (a relatively small number from the population of over 8 million). It is because of this, that the survey data from the policy document was not used by us as indicators of conflict in Southern Sudan. Although we did not use their survey data, they prove to be a potential future source for this type of information. Their study does provide a look into the Southern Sudan Police Services, their current status, and recommendations towards a better Southern Sudan. The major subject on which we chose to focus is the harmonization between the three major security-providing entities in Southern Sudan.

The CPA of 2005 specifically states that the SPLA's role is defense and the SSPS's role is internal security and criminal justice matters. The relationship between the two organizations has been challenging.<sup>17</sup> In 2007, there was even an instance when SPLA soldiers killed policemen due to ineffectively established responsibilities of organizations. The third piece of the puzzle is the traditional chiefs of the villages and tribes. The NSI surveys show that the population still heavily relies on these chiefs for security. If the security situation in Southern Sudan is going to improve, these three entities must work together (or at a minimum in toleration of one another).

Measuring a program such as this is difficult because there are many moving parts, and not all of them are indicative of the success of the program. Additionally, Southern Sudan's accountability of their program is poor at best. Therefore, we decided that the best way in which to measure the SSPS Program's status was to use a bar chart for value (0 being least likely to go to conflict, 100 being most likely) with varying degrees of harmonization as scenarios:

- All three groups work together towards same goal (0) – Self explanatory. Least likely to go to conflict due to cooperation.
- SSPS and SPLA work together towards same goal (5) – The 95% solution. If the GoSS recognizes these two organizations under the same division and they have defined responsibilities which are followed then Southern Sudan will be secure. Even in the current surveys done by NSI, people are most likely to turn to the police for criminal issues. This shows a variation in their dependence on Boma chiefs.
- SSPS and SPLA re-organized under same division of government (10) – This major step needs to happen in order to have an effective police force. By currently managing the two organizations under separate ministries within GoSS, it will allow for overlap of responsibilities.
- Effective accountability of SSPS and DDR programs (20) – There are currently ex-SPLA soldiers flooding the ranks of the SSPS as part of the DDR programs, and the accountability is ineffective. NSI notes that there is not an accurate tracking of numbers or those policemen who have received the necessary training in human rights issues and the boundaries of their work.
- Interference of SPLA with criminal justice matters (50) – The SPLA's primary responsibility is to safeguard Southern Sudan from external threats. When the SPLA serves both as a national defense force and law enforcement force, it becomes conflicted with the police force. This is a situation that won't directly lead to civil war but could lead to oppression. The snowball effect is possible here.
- Existence of Human Rights violations by organizations (85) – No matter the progress of the program, if an organization is committing Human Rights Violations, the people will not trust them for security. There have been early reports of SSPS committing these violations in Juba. This could destroy any hope of a legitimate security force.

<sup>16</sup> Alfred Sebit Lokuji, "Police Reform in Southern Sudan." June, 2009.

<sup>17</sup> Ibid.

- Groups work independently, SSPS disbands, or conflict between groups (100) – Self explanatory. Worst-case scenario.

Data Collection Source: North-South Institute, Annually

### 3.2.3 Governance Systemigram

Since Southern Sudan is a new nation, the government and its constitution have yet to be fully implemented. One element that is essential for a nation recovering from conflict is having stable and effective governance. These post-conflict indicators under the governance section measure how likely the elements of the national government, to include the legislature and judiciary, can cause or prevent the country from going into conflict. See appendix N – Governance Systemigram.

#### Percentage of government representation from each ethnic group (Dinka)

A republican government's number of members, ideally, will perfectly mirror the respective ratios of the population. If the electorate shares similar views with its constituents, then the policies that the legislature enacts will better benefit the population. These policies will also affect the perception of the effectiveness of the government, which is also an important factor, in addition to the *actual* effectiveness of the government. It would be undesirable for the minority to make decisions for the majority. Mr. Temin from USIP noted that the ethnic division between groups is a great source of stress and tension.<sup>18</sup>

The input for this indicator is the difference between percentage of representation of Dinka in the legislature and the percentage of Dinka in the general population. For example, if the legislature had 70% Dinka, but the population only has 30% Dinka people, then the input value is  $70\% - 30\% = 40\%$ . This data should be collected with each election/term cycle.

The Dinka in this case can be substituted with whatever majority is in the legislature or population. The importance is that the government representatives should, ideally, mirror the populace. If this happens, then the likelihood of conflict decreases.

Data Collection Source: Official Government of South Sudan records (Official website of the Government of South Sudan <http://www.goss.org>), Bi-Annually

#### Quality of life after independence

One factor that is important in determining the overall satisfaction and morale of a population is the measure their quality of life. Since Southern Sudan just recently became its own nation, it is extremely helpful to measure the quality of life after independence and compare it with the quality of life before the referendum.

One way to accomplish this is to conduct surveys. For this indicator, six categories are adequate and produce enough fidelity to justify values. They are "Extremely Satisfactory", "Very Satisfactory", "Satisfactory", "Unsatisfactory", and "Very Unsatisfactory".

"Extremely Satisfactory" equates to a value of "0", which means there is an extremely low likelihood of conflict. "Extremely Unsatisfactory" produces a value of 100, which is a very high likelihood of conflict. This data should be collected annually as a survey.

This reflects how citizens view changes, if any, to their living condition. This also is representative of the government's ability to respond to and take care of its people.

Data Collection Sources: Southern Sudan Conflict Meta-Analysis, Annually

<sup>18</sup> John Temin. Interview, USIP, Washington D.C., February, 2011.

---

### Perception of the quality of life following international intervention/assistance

With current peacekeeping operations occurring in Southern Sudan, the United Nations Mission in the Sudan (UNMIS) affects many aspects of daily life in Southern Sudan. Foreign capital, resources, and manpower can have a significant impact on a nation, whether the impact is good or bad. Therefore, it is important to measure how people perceive this foreign intervention. This is different from the *actual* effects, such as increase/decrease in GDP, violence, elections, food/water availability, among others. The perception is more indicative of how satisfied the people are of the foreign assistance in the nation.

This data should be collected in survey form, similar to the previous "Quality of Life" indicator. The categories are the same, but the values are different, as detailed on the Value Model charts.

Data Collection Source: USAID, USIP, Monthly

### Level of public satisfaction with accessibility to essential government services and utilities

In order for a government to be effective, it needs to be responsive to the citizens' needs. After the referendum was passed, people have high hopes for the promises that the new government made. If the government does not deliver on these promises, then the population will lose tremendous faith in the new government, quickly fostering instability.

Data for this indicator is collected in survey form, with the same categories as the "Quality of Life" indicator.

Data Collection Source: USIP, World Bank Survey, Annually

### Percentage of voters in population

The percentage of voters out of the population is important because it measures how active the people are in defining their government. The people's willingness to interact with their government will increase if they trust in the institution. In turn, if the institution fosters trust with the population, there is a less likely chance of conflict.

The percentage of registered voters is key in assessing how accessible the voting options are for the average citizen. This percentage should range from 0% to 100%. For a nation to have greater than 40% of the people to be eligible voters, the likelihood of dissatisfaction and other problems drop significantly. For the referendum,<sup>19</sup> over 60% of the population voted, and 99.57% of the people approved the passing of the referendum.

Data Collection Sources: CIA World Factbook, Country Compass

### Percentage of Judiciary members from each ethnic group (Dinka)

Similar to the structure of the first indicator in this section (Government representation), the input for this indicator is the difference between the percentage of a particular ethnic group within the Judiciary members and the percentage of the general population. The Dinka, in this case, can be substituted with whatever majority is in the judiciary or population. Since the judiciary members must make decisions that affect everyday life, in addition to more broad topics that affect the laws of the nation, it is imperative that those people also represent the interests of the various ethnic groups of Southern Sudan. Each elected or nominated judiciary member should be a person that best represents his or her constituents, which is the populace. If this happens, then the likelihood of conflict decreases.

---

<sup>19</sup> Hong'e, Mo. "Voting rate reaches 60% in south Sudan, 30% in north: report." JAN 2011.  
[http://news.xinhuanet.com/english2010/world/2011-01/12/c\\_13687605.htm](http://news.xinhuanet.com/english2010/world/2011-01/12/c_13687605.htm)



Data Collection Source: Official Government of South Sudan records

### 3.2.4 Economy Systemigram

Economy is an important factor to analyze when trying to predict the likelihood of a developing nation falling into civil war. The economy not only directly affects the people, but the overall health of the nation. Sudan's economy has many contributing factors such as inflation, diversity of their economy, how much people are spending, etc. Currently the situation is unstable because of the oil situation and the corruption within the government. Many factors will lead to the overall "happiness" of the people. The economy therefore plays an integral role in determining if a developing nation such as Southern Sudan will fall into civil war. See appendix O – Economy Systemigram.

#### Percent of Total Revenue from Oil

Southern Sudan is a nation that is heavily reliant on oil as a source of revenue; it is recorded that 98% of the total revenue comes from oil.<sup>20</sup> This is very risky because the oil industry is very unstable due to the price of a barrel being so sensitive to changes around the world. Recent rises in the demand of oil has allowed smaller nations that rely heavily on oil as their main source of revenue to thrive economically, which has been evident in Sudan. China has recently shown great interest in Sudan due to the oil (invested 6 billion).<sup>21</sup> The uncertainty of oil prices along with Southern Sudan's extreme economic dependence allow for a strong possibility of an economic crash. This was the case in 2009 when oil exports in Sudan had declined by a staggering 60%. Oil prices reached an all time high of \$132 per barrel in 2008 before dipping to \$35 in 2009.<sup>22</sup> This case shows that a country so dependent on oil is susceptible to harsh changes affecting the market. If the market is doing well the country has the ability to invest into a lot of different projects, but if such a case were to occur where the oil prices crash, all those investments turn into debt. This causes the purchasing power to decline significantly and the government's main focus turns to erasing debt. The way to mitigate such a crisis is to diversify their economy into such projects such as agriculture and domestic economy.

There were three reasons *TrustLaw* said dependence on oil revenue leads to social unrest: Oil volatility makes it difficult to form a budget; low oil prices mean there is less money to spend; and high oil prices create unrealistic expectations within the population. Along with this, a dependency in one economic sector can cause competition in other sectors to be less competitive because the main sector will have the majority of the funding and support to maintain its revenue. Furthermore, this may cause levels of employment in those minor sectors to fall.<sup>23</sup> If another crash occurs, the public is going to suffer the most. Even with their already tight budget and situations, they will be forced to bear the burden of increases in taxes and prices due to a non-diverse economy.

Data Collection Sources: *Statistical Yearbook for Southern Sudan 2010*, Annually.

#### Inflation

As price levels rise, each unit of currency buys fewer goods and services; thus, the people's purchasing power will decrease dramatically with inflation, and it will further strain their budget. For people who are already in a bind with finances to support their family, it will be even more difficult with inflation. The ability to buy fewer good and services, which causes social unrest, eventually can lead to massive demonstrations and revolutions. Some recent examples that demonstrated this situation were the Tunisian and Egyptian revolutions of 2011. In these situations inflation was considered one of the main reasons for the cause of revolution by the people.<sup>24</sup> Another direct effect his may have on the people is

<sup>20</sup> *Statistical Yearbook for Southern Sudan 2010*

<sup>21</sup> Sudan Tribune. *China Invests 6 Billion Dollars in Sudan's Oil*. November 5, 2007.

<sup>22</sup> Sudan Tribune. *Oil Revenue in Sudan Slashed by 60% in 2009: GoSS*. March 1, 2009.

<sup>23</sup> Luke Balleny. *Oil Partly to Blame for Middle East Uprisings*. 11 April 2011.

<sup>24</sup> Shane Doyle. *Food Inflation Causes Political Conflict*. The Munch, March 5, 2011.

that they may turn to the black market. What the black market offers are better exchange rates for the U.S. dollar. This is appealing to the people who may get lower rates at the national bank. This has a tertiary effect of undermining the legitimacy of the bank. Also governments have to raise interest rates to tackle inflation and also the removal of price controls, leading to rapid price rises for basic goods and services. Jacques Diouf, director-general of the UN's Food and Agriculture Organization, said surging prices for basic food imports such as wheat, corn and milk had "potential for social tension, leading to social reactions and eventually even political problems".<sup>25</sup> The CIA *Field Listing* has inflation rates for developing countries between 5%-10%. IMF chief economist said that "higher inflation rates are consistent with greater labour market flexibility and lower unemployment."<sup>26</sup>

Data Collection Sources: CIA *Field Listing*, Annually.

### Effectiveness of the Anti-Corruption Commission

The Southern Sudan Anti-Corruption Commission was established under the interim constitution of southern Sudan. In 2009, the Southern Sudan Anti-Corruption Act legitimized the SSACC and established its responsibility to investigate cases of corruption and deter administrative misbehavior in public positions.<sup>27</sup>

Corruption destroys development, people and governments. It can lead to the failure of essential public projects like schools, hospitals, and roads. These basic services are all desperately needed in Southern Sudan, so it is important that measures are in place to ensure that these facilities get delivered to the people. Any resemblance of the Commission to fulfill their duty will have an enormous effect on the population in a positive manner. If the public sees that corruption is being battled then they can carry on with their lives knowing that they can rely on the Commission to fight for their rights. Mawan Muortat went as far as to say "Corruption is a menacing threat to Southern Sudan. I would place it in par with security, malnutrition, disease, illiteracy and tribal divisions."<sup>28</sup>

Another big issue stemming from the problem of corruption is the distribution of wealth. John Dau mentioned that there are the politicians and the military leaders who have an abundance of wealth and everyone else has next to nothing. He noted that there are no class distinctions between the people below the wealthy; he would just consider them all poor.<sup>29</sup> This is evidence that there is corruption in the system and the people who have power will do whatever to stay in power at the expense of the people. Until this is resolved the people will not be able to develop and grow.

Data Collection Sources: GoSS Website, Annually

### Per Capita Consumption

The *Statistical Yearbook for Southern Sudan 2010* provides data on the average consumption per month by state. The Government of Southern Sudan official website provides an average consumption per month for all of Southern Sudan: 100 SDG. This value is a baseline for which the people have enough to support themselves and their family. The yearbook also breaks down their consumption by category. As suspected, more than 75% of their total consumption goes towards housing and food. This indicates that there is no "extra" money to spend on amenities that may make their lives easier. They are making just enough to survive. When looking at the different regions of Sudan, there are many rural areas that are averaging around 30 SDG per month. This is a major concern because this indicates that people in the

<sup>25</sup> Javier Blas. *U.N Warns of Unrest as Food Price Inflation Hits Developing Countries*. September 7, 2007.

<sup>26</sup> R.A. *A Healthy Dose of Inflation*. The Economist. February 15, 2010.

<sup>27</sup> Dr. Pauline Riak. Southern Sudan Anti-Corruption Commission. Accessed March 20, 2011. < <http://www.goss-online.org/magnoliaPublic/en/Independant-Commissions-and-Chambers/Anti-Corruption.html> >

<sup>28</sup> Mawan Muortat. *Southern Sudan: Transform the Anti-Corruption Commission into a Roaring Lion*. July 20, 2010.

<sup>29</sup> John Dau. Interview, Washington D.C., March 25, 2011.

rural areas who are dependent on farming cannot adequately support themselves. John Dau indicated to us that farmers are hesitant to continue to farm their land because borders are not established between tribes, and people turn to “raids” to obtain the basic needs. With this occurring, there cannot be any sort of legitimate farming because security cannot be provided. He also said that the government acts as a welfare-type function. This is subject to corruption because whoever is in power can play favorites and allocate funds to whomever. Without security, the people in the rural areas are subject to these “raids” and therefore cannot have a properly functioning farm to earn food and money to support their families. The per capita consumption is taken every month and is an average for all the states.<sup>30</sup>

Data Collection Sources: *Statistical Yearbook for Southern Sudan 2010*, Monthly

### 3.2.5 Social Systemigram

Southern Sudan is full of problems concentrated around the needs, wants, and desires of people groups. Tensions between different ethnic tribes have proven to be a problem in Southern Sudan long before the referendum. Violence has occurred due to ethnicity, competition over resources such as land, water and food, and villages are being looted and burned, forcing thousands to relocate every year. The objective is to put these historical differences aside, make compromises, and find a foothold for the Southern Sudanese to rally under as a unified people. See appendix P – Social Systemigram.

#### Religious Influence

Southern Sudan has turned to Christianity as a source of unity. The North is predominantly Muslim while Southern Sudanese generally follow indigenous or Christian denominations. Although Christianity is not necessarily the “national religion” among the Southern Sudanese, it has brought many of them together behind a common peaceful cause.

Religious sermons have turned political, contributing to the high levels of support for the referendum. The Southern Sudanese believe that their freedom is specifically referred to in the book of Isaiah.<sup>31</sup> Spikes in church attendance occur every time conflict with the north intensifies.

Religious leaders have had a large influence in political mobilization.<sup>32</sup> Juba's Archbishop Paulino Lukudu Loro voted commenting that, “[the election is] a great occasion... [the people are] poised, prepared and ready to vote.” and prays that there won't be problems with the execution of the vote.<sup>33</sup> Political figureheads are using religion as a unifying tool in conjunction with their policies. Vice President Machar advised against a government all-out war against southern rebel groups during a prayer gathering.<sup>34</sup>

The Catholic and Episcopal churches are the predominant Christian denominations in southern Sudan with well-established hierarchies.<sup>35</sup> The New Sudan Council of Churches unites Christians together regardless of denomination with a goal of facilitating peace and development.<sup>36</sup> The public's perception of the church is significantly affected by the aid services provided by organizations like this.

<sup>30</sup> John Dau. Interview, Washington D.C., March 25, 2011.

<sup>31</sup> Kauffman, Casey. “Religion Influences Sudan Vote: Some Believe that the Referendum is a Gift from God Which will Lead to South's Independence.” Aljazeera, 4 Jan. 2011. <http://english.aljazeera.net/video/africa/2011/01/20111461538831470.html> (accessed March 2011).

<sup>32</sup> Mutasa, Haru. “Southern Sudan Plagued by War Fears: As Region Prepares for January Referendum, Many Fear Return of Conflict to the Country.” Aljazeera, 16 Oct. 2010. <http://english.aljazeera.net/video/africa/2010/10/20101015185026585696.html> (accessed March 2011).

<sup>33</sup> “Churches Call for Southern Sudan to Vote for Independence.” BBC, 13 July 2010. <http://www.bbc.co.uk/news/10619325> (accessed April 2011).

<sup>34</sup> “Machar Opposed to an all-out War Against Forces of George Athor.” Sudan Tribune, 7 March 2011. <http://www.sudantribune.com/Machar-opposes-to-all-out-war,38202> (accessed March 2011).

<sup>35</sup> “Structured View of Bishops: Sudan.” Catholic Hierarchy, 21 Feb. 2011. <http://www.catholic-hierarchy.org/country/bsdqv.html> (accessed March 2011).

<sup>36</sup> “Sudan: Race and Religion in Civil War.” Georgetown University: Berkley Center for Religion, Peace, & World Affairs, [berkeleycenter.georgetown.edu](http://berkeleycenter.georgetown.edu) (accessed April 2011).



The indicator has been formulated as a criteria-based rating of the perception of religious influence. Religious and religiously affiliated political figureheads, aid services provided by Christian organizations, and the population belonging to Christian denominations are contributing factors to the rating. The frequency of this indicator can be updated on a semi-annual to annual basis based on current events involving Christian efforts in Southern Sudan.

Data Collection Source: Surveys not existent, but inferences made from references in order to score, Annually.

### Tribal Discord

*"Between tribes there can only be war. And through war, the memory of war, and the potentiality of war, the relations between tribes are defined and expressed."* – E.E. Evans-Pritchard, *British anthropologist of the Sudan*<sup>37</sup>

In 2010 former US director of national intelligence, Dennis Blair, warned that, "over the next five years, a number of countries in Africa and Asia are at significant risk for a new outbreak of mass killing," and stated that it is most likely to occur in Southern Sudan.<sup>38</sup> Essentially, there are two problems. Tribes continue to resort to violent competition against one another because this is what they have been doing for years and they are competing for scarce resources while they have no reason or national identity to motivate them to work together. Secondly, Political figureheads are turning them against one another. The SPLA/M is made up of mostly Dinka. They are allowing and even encouraging the Dinka to assist them in their disarmament efforts. SPLA/M defectors are rallying tribes to fight against the SPLA/M and it is possible that they are being armed by Khartoum with the agenda of creating chaos to ensure Southern Sudan fails.

Areas of tribal conflict focus around Central Equatoria, Jongeli, and Upper Nile States and all 10 states of southern Sudan have been affected in some way. Land is fertile but flat causing water to stand stagnant and making farming unreliable, therefore, they rely on cattle, a prized possession to the Southern Sudanese which has been a major factor contributing to conflict.<sup>39</sup> 2,500 people died and 400,000 were displaced in 2010 due to cattle raids.<sup>40</sup> During the second civil war, there were more deaths due to tribal rivalries than northern enemies.

Along with violence between tribes, tribes are also rebelling against the government. Not even a week after referendum results, conflict between George Athor and the SPLA broke out resulting in 100 deaths. The sharing of power will now become a more complicated, internal issue.<sup>41</sup>

Military leaders, including MG Garoth affirms that conflict is aggravated by difficulty implementing the disarmament program. SPLA GEN Matur Chuot Dhuol says that the rebels are backed by Khartoum in attempt to destabilize Southern Sudan.<sup>42</sup> The GoSS blames the National Congress Party (NCP) for the flow of guns into civilian hands.

<sup>37</sup> Welsh, May Ying. "Sudan: Transcending Tribe." Aljazeera, [http://english.aljazeera.net/photo\\_galleries/africa/201111010324526960.html](http://english.aljazeera.net/photo_galleries/africa/201111010324526960.html) (accessed April 2011).

<sup>38</sup> "Sudan's Biggest Ethnic Group: On your Tractor, if you can." The Economist, 6 May 2010.

<sup>39</sup> "Sudan's Biggest Ethnic Group: On your Tractor, if you can." The Economist, 6 May 2010.

<sup>40</sup> [http://www.economist.com/node/16068960?story\\_id=16068960&fsrc=rss](http://www.economist.com/node/16068960?story_id=16068960&fsrc=rss) (accessed April 2010).

<sup>41</sup> Ibid.

<sup>42</sup> Ghale, Pratima. "A Rocky Road Ahead for Southern Sudan." The Mount Holyoke News, 17 Feb. 2011. [http://www.economist.com/node/16068960?story\\_id=16068960&fsrc=rss](http://www.economist.com/node/16068960?story_id=16068960&fsrc=rss) (accessed April 2011).

<sup>42</sup> Welsh, May Ying. "Sudan: Transcending Tribe." Aljazeera, [http://english.aljazeera.net/photo\\_galleries/africa/201111010324526960.html](http://english.aljazeera.net/photo_galleries/africa/201111010324526960.html) (accessed April 2011).

In summer 2010, the SPLA torched, looted, raped, and killed civilians in villages of the Shilluk kingdom, displacing 10,000 people. There are four tribal rebellions fighting against the SPLA, coordinated by renegade SPLA George Athor, unhappy with corruption and allocation of power. He states, "All tribes are not equal in the SPLM/A," the reasoning behind the rebellions. Athor denies SPLA claims that the rebellion is funded by Khartoum and argues that it is an excuse for them to act by force. Peter Adwok Nyaba, a Shilluk author states, "Tribalism is a very serious problem, but it doesn't happen because one tribe doesn't like another. It happens because political and military elites use tribes, rallying and inciting their ethnic communities against each other to build a power base."<sup>43</sup>

The SPLM/A continues to fight in the Shilluk kingdom because it threatens its supremacy in the Government of Southern Sudan (GoSS). The SPLA is dominated by the majority Dinka and Nuer tribes, who rose against the north in the second civil war. Northern Sudan began arming the Murle to combat the rebellion as early as 1963 during the first civil war.<sup>44</sup> Tribes either sided with the SPLA or Khartoum to secure their protection. Following the 2005 CPA most tribes joined back with the SPLA. Rebel groups continue to break away from them once again.

In November, the United Nations Mission in Sudan (UNMIS) described the Upper Nile situation as 'low level' but could escalate. There is a lack of clarity regarding the ceasefire between SPLA and Gwang, and the land disputes between Shilluk and Dinka could heighten tensions. Without resolution of power dominance by the Dinka, possibility of ethnic conflict will always remain, and social-political agendas will continue to exist.

Indicators are based on the Human Rights Index from the University of North Carolina and Johns Hopkins University. Rating is based on a criteria-based rating scale from levels 1 to 5. The human rights index is the degree to which countries experience violence against their own population. The scores range from countries under secure rule of law with no imprisonment for their views, to violence in the form of assassinations and torture extended to the whole population. Examples of level 5 are Angola, Afghanistan, South Africa, and Suriname; Examples of level 1 are the U.K., New Zealand, Botswana, and Denmark.<sup>4546</sup> USAID updates data on the human rights index on an annual basis.

Data Collection Source: Human Rights Index (UNC, JHU, USAID), Annually

### Refugee and IDPs

Southern Sudan is faced with a refugee problem flowing both ways. Many taking refuge in the North are now migrating back to their homes in Southern Sudan while conflict is still creating a big problem with displacement among Southern Sudanese.

2 million refugees are in the process of returning to a region with an already tight resource allotment.<sup>47</sup> This is creating problems because the returning region is still affected by insecurity, limited access to water, health care, education, and livelihood opportunities. Refugees may simply integrate where they are in the north or attempt to resettle in southern Sudan's rapidly expanding towns.<sup>48</sup>

---

<sup>43</sup> Ibid.

<sup>44</sup> Ibid.

<sup>45</sup> "The Political Terror Scale (PTS): A Re-introduction and a Comparison to CIRI" John Hopkins University Press: Human Rights Quarterly, Volume 32, Number 2, May 2010, pp. 367-400 (Article), <http://www.politicalterroryscale.org/datafiles/hrq%20pts.pdf> (accessed April 2011).

<sup>46</sup> USAID: Country Compass. <http://www.countrycompass.com/> (accessed March 2011).

<sup>47</sup> "Sudan's Biggest Ethnic Group: On your Tractor, if you can." The Economist, 6 May 2010. [http://www.economist.com/node/16068960?story\\_id=16068960&fsrc=rss](http://www.economist.com/node/16068960?story_id=16068960&fsrc=rss) (accessed April 2010).

<sup>48</sup> "Sudan: Durable Solutions Elusive as Southern IDPs Return and Darfur Remains Tense." Internal Displacement Monitoring Centre, 31 Dec. 2010. <http://www.internal-displacement.org/countries/sudan> (accessed April 2011).

In summer 2010 over 10,000 were displaced due to SPLA looting.<sup>49</sup> Last year 2,500 people killed and 400,000 displaced due to inter-ethnic warfare. 50,000 displaced due to flooding in Jonglei, Upper Nile, Unity, and Northern Bahr el Ghazal.<sup>50</sup> The Sulain Arabs are a nomadic tribe that migrates between the north and south. Because of climate variations during the course of the year their cattle must migrate between north and south seasonally. With the coming of the divided countries, they will not be allowed to do this now. Their tribe will have to drastically change their ancient lifestyle or they will become extinct.<sup>51</sup>

The indicator is based on refugees per 1,000 people. The United Nations High Commissioner for Refugees gives the world total of 34,000,000 refugees displaced by war, and 25,000,000 IDPs.<sup>52</sup> They are focused on 24 countries where refugees are a major concern from 4 million to 150 thousand (extreme to high), or 250 to 4 per 1,000 people and Nation Master ranks up to the top 52 most troubled countries to 1,000 total or .068 per 1,000 people (low).<sup>53</sup> This indicator has a very high variability as states with 150 thousand refugees are considered at risk, but there are still states with an upward of 6 million refugees. This indicator can be updated on an annual basis.

Data Collection Source: Nation Master, Annually.

### Access to Improved Water Sources

Tribes have been fighting each other for centuries over grazing land, water points, and land occupation.<sup>54</sup> Throughout Southern Sudan, boreholes, small dried wells, are the primary source of water.<sup>55</sup> Limited water access has led to conflict in Upper Nile, Jongeli, Unity, Lakes, Northern Bahr el Ghazal, Warab, Blue Nile, Southern Kordofan, and Abyei. The demarcation of shared borders centered around major water sources is also considered a still unresolved issue from the CPA signed with the North in 2005. Factoring in the number of refugees returning to the South, access to fresh water will continue to be a driving factor of conflict in Southern Sudan.

Southern Sudan is not the only region in the horn of Africa plagued by limited water availability. Tobi, a tribe in Kenya deals with the issue as well. Herders often take their flocks to lakes to collect water. The dry season makes this a rarity and it becomes a fight for survival. Five years ago, 60 people died in a raid from a neighboring tribe over the water at their disposal. Tribes are prepared to fight and kill over such a valuable resource. A similar situation occurs in the Dukali village in Southern Ethiopia. Water has become such a rare and precious resource that herders arm themselves before trekking to water holes and every day brings the risk of death over water conflicts. Peace talks have been encouraged in an attempt to get tribes to work together in the event of future droughts.<sup>56</sup>

A USAID relief program to provide improved water sources with the hopes of improving quality of life and reducing tribal violence has proven successful thus far. USAID has been working with rival tribal leaders to optimize the impact on the greatest number of people while satisfying all parties involved, facilitating

<sup>49</sup> Welsh, May Ying. "Sudan: Transcending Tribe." Aljazeera, [http://english.aljazeera.net/photo\\_galleries/africa/201111010324526960.html](http://english.aljazeera.net/photo_galleries/africa/201111010324526960.html) (accessed April 2011).

<sup>50</sup> "Sudan: Durable Solutions Elusive as Southern IDPs Return and Darfur Remains Tense." Internal Displacement Monitoring Centre, 31 Dec. 2010. <http://www.internal-displacement.org/countries/sudan> (accessed April 2011).

<sup>51</sup> Welsh, Ying. "Degrees of Separation: People and Power Travels the Nile into Southern Sudan to Discover what Divides the Sudanese." Aljazeera, 29 Dec. 2010.

<http://english.aljazeera.net/programmes/peopleandpower/2010/12/2010122964716111620.html> (accessed March 2010).

<sup>52</sup> "Refugee & IDP Facts and Statistics." World Issues and Critical Thinking, 30 Aug. 2010.

<http://worldissuesandcriticalthinking.wordpress.com/2010/08/30/refugee-idp-facts-and-statistics/> (accessed April 2011).

<sup>53</sup> "Immigration Statistics: Refugees by Country." Nation Master. [http://www.nationmaster.com/graph/imm\\_ref-immigration-refugees](http://www.nationmaster.com/graph/imm_ref-immigration-refugees) (accessed April 2011).

<sup>54</sup> Analyzing Tribal Conflicts in Southern Sudan and GoSS Failure in Dealing with the Problem (3 February, 2010).

<sup>55</sup> "Improved Water Access Reduces Conflict: More Water Wells and Better Pumps Improve Living Standards." USAID, 20 Aug. 2009. [http://www.usaid.gov/stories/sudan/ss\\_su\\_water.html](http://www.usaid.gov/stories/sudan/ss_su_water.html) (accessed April 2011).

<sup>56</sup> "When the Water Ends: Africa's Climate Conflicts." Yale Environment 360.

[http://e360.yale.edu/feature/when\\_the\\_water\\_ends\\_africas\\_climate\\_conflicts/2331/](http://e360.yale.edu/feature/when_the_water_ends_africas_climate_conflicts/2331/) (accessed April 2011).

peaceful coexistence among these communities. People are using over 3 times as much water as they were previously and effort required to collect water has been significantly reduced. Tribal warfare had decreased in 2010, a relationship being tied to the good rain season providing a water surplus and better cattle grazing.<sup>57</sup>

The indicator is based on a water conflict chronology map from the Pacific Institute which specifies 13 African countries which have resorted to violence over water from 2000 to present day. The percentage of the population with access to improved water sources was collected from USAID for each of these countries. Their statistics provided the baseline assumption for the tipping point at which violence begins to appear.<sup>58,59</sup> The percentages of population with access to improved water sources can be updated on an annual basis.

Data Collection Source: USAID, annually.

### 3.3 Swing Weight Matrix

Once the metrics are developed we must determine the level of importance, develop weights, and normalize them. We use a swing weight matrix to assign weights at different levels in value hierarchy. Ideally this should be at the value level below the objectives. One measure is assigned an arbitrary unnormalized weight (e.g., 100). The highest or lowest weighted cells are the best place to start. Any swing weight technique can be used, e.g. balance beam or value increment to assess the remaining weights. Global swing weights are obtained by normalizing the weights as shown in Equation 3.2.

$$w_i = \frac{f_i}{\sum_{i=1}^n f_i}, \quad (3.2)$$

Where  $f_i$  = un-normalized matrix swing weight corresponding to value measure  $i$ .

The value hierarchy above does not depict constant local weights for the sample evaluation measures because these measures may not always be appropriate for the situation and environment. In addition, some information may not be made available or does not currently exist, so this must also be taken into account when determining appropriate measures. Appropriate evaluation measures and local weights will need to be determined, based on current information, when using the model.

A swing weight matrix is used to assign weights based upon the importance of the value measure to the decision makers and stakeholders and the range of the value measure. This concept is shown in Figure 3.6. Note that value measures are typically placed in the right cell depending upon their importance and variation. Variation is difficult to ascertain because we routinely make intuitive judgments about importance without the impact of the actual variation of the value measure range for the decision under consideration.<sup>60</sup>

The definition of importance and variation will be different for each decision and requires hard thinking. The task is similar to defining two constructed scales. Variation may be easier to discuss as the “impact of the value measure range on the decision.”<sup>61</sup>

<sup>57</sup> “Sudan: Durable Solutions Elusive as Southern IDPs Return and Darfur Remains Tense.” Internal Displacement Monitoring Centre, 31 Dec. 2010. <http://www.internal-displacement.org/countries/sudan> (accessed April 2011).

<sup>58</sup> “Water Conflict Chronology Map.” Pacific Institute, 2011. <http://www.worldwater.org/conflict/map/> (accessed April 2011).

<sup>59</sup> USAID: Country Compass. <http://www.countrycompass.com/> (accessed March 2011).

<sup>60</sup> Parnell, Gregory and Trainor, Timothy, “Using the Swing Weight Matrix to Weight Multiple Objectives.” Proceedings of the INCOSE International Symposium, Singapore, July 19-23, 2009.

<sup>61</sup> Ibid.

		Importance of the value measure to the decision		
		High*	Medium	Low
Range of variation of the value measures	High	A	B <sub>2</sub>	C <sub>3</sub>
	Medium	B <sub>1</sub>	C <sub>2</sub>	D <sub>2</sub>
	Low	C <sub>1</sub>	D <sub>1</sub>	E

**Figure 3.6 Elements of a swing weight matrix<sup>62</sup>**

Weights in the following cells need to follow these relationships:

- A > all other cells
- B<sub>1</sub> > C<sub>1</sub>, C<sub>2</sub>, D<sub>1</sub>, D<sub>2</sub>, E
- B<sub>2</sub> > C<sub>2</sub>, C<sub>3</sub>, D<sub>1</sub>, D<sub>2</sub>, E
- C<sub>1</sub> > D<sub>1</sub>, E
- C<sub>2</sub> > D<sub>1</sub>, D<sub>2</sub>, E
- C<sub>3</sub> > D<sub>2</sub>, E
- D<sub>1</sub> > E
- D<sub>2</sub> > E

Multiple measures can be placed in the same cell with same or different weights.

Our final swing weight matrix is shown in Figure 3.6 and shows all of our indicators together, with relative and measure weights. The indicators are grouped by both row and column. Further, they are given a relative weight from 0 – 100 so show how much each one influences the overall model. By row, the indicators are grouped by level of variation in the data, from low to high. By column, the indicators are grouped by relative importance to the overall model. We combined all of our indicators into this matrix and consulted with each other and our stakeholders to determine where they should be placed and how much weight should be assigned to each.

<sup>62</sup> Parnell, Gregory and Trainor, Timothy, "Using the Swing Weight Matrix to Weight Multiple Objectives." Proceedings of the INCOSE International Symposium, Singapore, July 19-23, 2009.



		Level of Importance								
		High	Swt	Mwt	Moderate	Swt	Mwt	Low	Swt	Mwt
Variation	High	# Casualties as a result of attacks by rebel opposition group (by month)	100	0.1042	Quality of life after independence	50	0.0521			
	Moderate	Status of DDR	85	0.0885	Inflation rates	45	0.0469	Perception of Anti-Commission on Corruption	20	0.0208
		% of total revenue from oil	80	0.0833	Harmonization of SPLA, SSPS, and traditional Boma Chiefs	45	0.0469	Percentage of Judiciary that are Dinka	15	0.0156
		Refugees and IDP per Capita	80	0.0833	Perception of the quality of life following international intervention/assistance	45	0.0469			
	Low	Human Rights Index	65	0.0677	Percent Population with Access to improved Water Source	40	0.0417	Use of SPLA to oppress political opposition groups	10	0.0104
		Percentage of population geographically affected by rebel groups	60	0.0625	Percentage of voters in population	40	0.0417			
		Per Capita Consumption	60	0.0625	Perception of Religious Influence	35	0.0365			
		Level of public satisfaction with accessibility to essential government services and utilities	55	0.0573	Percentage of government representation (Dinka)	30	0.0313			

**Figure 3.7** Swing weight matrix for our conflict indicator model

The end user can easily modify the relative weights and adjust them to suit any new information that is gathered. These cells are directly linked to the user data input page and will modify the final score.

### 3.4 Input Matrix

The Input Matrix is what the end users see whenever they open the Weighted Value Model Excel document. It provides an upfront view of all the indicators, grouped by sector. At the bottom is the final score for the *Total Likelihood of Civil War*.

In Appendix Q, the matrix is populated with the data that yields the lowest score (out of 100) for the likelihood of civil war. This will result in a score of 1, since this would be the best case, lowest likelihood data. All the sample values are at the most optimistic/extreme ends of the input ranges. This results in a very low likelihood of conflict. This should be the starting point for the end user, who can then input the most current data to calculate the current score.

In Appendix R, the matrix is populated with the most current data as of this writing. This yields a score of 51. It is now up to the analysts at AFRICOM to interpret this result, since the integration of this model with the probability of civil war is beyond the scope of our project.



## Chapter 4

# Summary and Conclusions

This research in support of AFRICOM was to develop a model to predict the likelihood that Southern Sudan would fall into civil war. To obtain a basic understanding of the situation in Sudan we were first tasked to do a background presentation on the history, CPA, referendum, and what indicators are. This enabled us to build a foundation on which we had a basic understanding of the current situation in Sudan. From this research we were able to come up with four major themes we saw that had major impacts on the likelihood of conflict: economy, governance, security, and social factors.

The next step was to break down each of the major themes and individually develop indicators for them. We originally obtained most of our indicators from the book MPICE, which did research on post-conflict indicators. The problem was that it was a broad spectrum of indicators that could be applied to any country. We need to tailor our indicators specifically for Southern Sudan. With this in mind while researching information on each of our sections we came across some point of contact (POC) that we could use to help in the process of developing these indicators.

The first POC was John Temin from the USIP. He was the first subject matter expert that we consulted. He provided us with some of the major concerns that Sudan was facing and would face in the future. Later he also sent us the Statistical Yearbook for Southern Sudan 2010, which was essential for gathering quantitative data for some of our indicators.

The next contact was CPT Felix Kumai, who is a Chaplain at West Point. Doing our research solely with the “western” perspective, CPT Kumai provided us insight of the “eastern” perspective being from Nigeria. He was able to provide us with details that cannot be obtained through plain research.

John Dau, from the Lost Boys of Sudan, was the most important contact to grasp that “eastern” perspective. Being a refugee of Sudan, he has the personal experience to provide us with validation of our indicators. He not only went into detail about each of the indicators and the situation, but he helped us in formulating our weights for the indicators. See appendix S for stakeholder interviews.

Once the indicators for our model were solidified we could start to work on the Systemigram. The Systemigram is an effective tool to represent the relationships that individual indicators have with their respective functions and also in the larger sense with all major themes. With the capstone we did last year, in which we developed a Systemigram to show the stability in Afghanistan, in mind we learned from our mistakes. We built the Sudan Systemigram with clear and concise outlines for each of the nodes. This enables the stakeholder or whomever to effectively grasp the interactions that affect the indicators that we produced.

The Systemigram was essentially in developing our weights for the swing weight matrix. The difficulty with this task was to rank order and assign weight not just to indicators within a specific section such as economy, but to have the ranked relative to all the indicators. The best way to come up with these weights was to sit down as a group and use the research and interviews to come up with weights for each of the indicators based on variation and level of importance.

We then needed to produce value measures and justifications for all of the indicators that we developed. This was the most time consuming part of the project. We needed to go into detail first why the indicator had any impact on if Sudan would fall into conflict and then we needed to justify why we gave each measure the value that we assigned. This required us to provide justifications not only from the research and the interviews but backing of prior case studies.

Once the measures were developed for each indicator, all that was left to do was to compose an Excel® sheet that would take an input and provide an output that is based not only on the values that we assigned for each indicator but also the weight it had. AFRICOM and other subject matter experts reviewed and helped us refine the measures and weights.

The model was developed and produced a value for which the likelihood of Southern Sudan had to go into conflict. This is a base model, which would be handed off to subject matter experts and analysts in AFRICOM. They would then make necessary changes to either the indicators or weights to better fit the current situation and most accurately output a value. Our team provided the research and analysis to come up with the indicators and justifications, something that the members of AFRICOM may not have had time to come up with by themselves. With our work it will be easy to modify the model to make it even more accurate.

The methodology presented has some utility as a template for developing conflict indicators. Though every country/region is unique the same methodology could be used.

## Appendix A

### List of Acronyms and Abbreviations

AFRICOM - United States Africa Command  
BCE - Before the Command Era  
CIA - Central Intelligence Agency  
CPA - Comprehensive Peace Agreement  
DDR - Demobilization, Demilitarization, and Reintegration  
GoSS - Government of Southern Sudan  
IDP - Internally Displaced People  
LTC - Lieutenant Colonel  
MPICE - Measuring Progress in Conflict Environment  
NCP - National Congress Party  
NGO - Non-Governmental Organization  
NIF - National Islamic Front  
NSCC - New Sudan Council of Churches  
OAG - Other Armed Group  
PCPB - Post Conflict Peace Building  
SPLA - Sudan People's Liberation Army  
SPLM - Sudan People's Liberation Movement  
SPLM-DC - Sudan People's Liberation Movement - Democratic Change  
UNHCR - United Nations Refugee Agency  
UNMIS - United Nations Mission in Sudan  
USAID - United States Agency for International Development  
USIP - United States Institute of Peace  
USMA - United States Military Academy  
UNMIS - United Nations Mission in Sudan



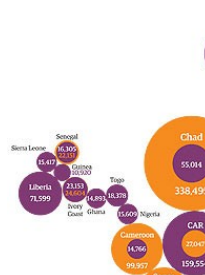
## Appendix B World Refugee Hotspots<sup>63</sup>

Illustrating the world's refugee hotspots:  
The countries they flee from and the hosts  
that shelter them, all in one map

Top 50 origin countries of UNHCR-monitored refugees  
Top 50 host countries of UNHCR-monitored refugees  
Internally displaced people monitored by UNHCR  
Palestinian refugees monitored by UNHCR



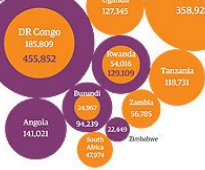
**Middle East and North Africa**  
The crisis in refugee numbers, to just over 2m, is mainly attributed to a revised estimate of Palestinian refugees from Jordan and Syria (see comments below the arrival of 12,000 Somali refugees in Yemen). Crucially, the UNHCR figure does not include the 4.5m Palestinians living in occupied territories – which are run by another UN body, UNRWA.



**Where do Afghanistan's refugees go?**  
For the last three decades, Afghanistan has been the leading country of origin for refugees. Currently, 2.9m Afghans are living in one of 73 host countries, though 90% are located in Iran and Pakistan. Their positions as countries with the most refugees are almost solely due to Afghans crossing their borders.



**World refugees under UNHCR**

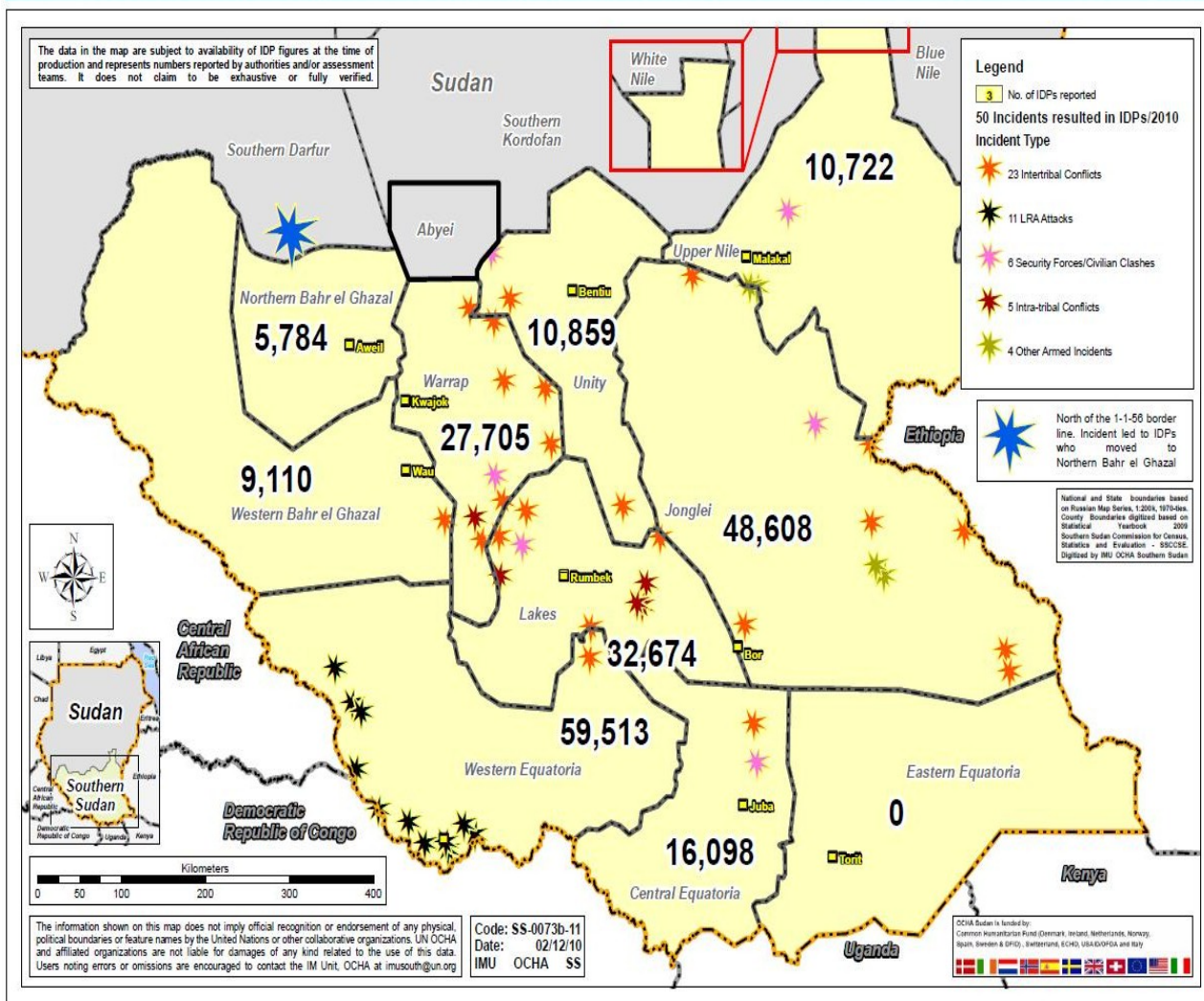


<sup>63</sup> UNHCR Refugee Statistics: Full Data. Guardian.co.uk, June 15, 2010.  
<http://www.guardian.co.uk/news/datablog/2010/jun/15/refugee-statistics-unhcr> (accessed March 2011).

## Appendix C

### Cumulative Figures of Conflict Related Displacement<sup>64</sup>

Cumulative figures of new conflict related displacement reported in 2010 - Status 30/11/10: 221,073 IDPs  OCHA



<sup>64</sup> Southern Sudan: Cumulative Figures of New Conflict Related Displacement in 2010. Human Security Report Project, November 30, 2010. <http://www.humansecuritygateway.com/showRecord.php?RecordId=34540> (accessed April 2011).



## Appendix D Structured View of Bishops in Sudan<sup>65</sup>

- **Juba:** Paulino Lukudu Loro, M.C.C.I. (70.70 , 32.16 , 28.21 )
  - Santo Loku Pio Doggale, Auxiliary Bishop (41.35 , 0.44 )
  - Malakal: *Vacant* (1.97 )
  - Rumbek: Cesare Mazzolari, M.C.C.I. (74.24 , 12.50 )
  - Tombura-Yambio: Edward Hiiaboro Kussala (47.11 , 3.04 )
  - Torit: Akio Johnson Mutek (53.34 , 11.96 , 3.90 )
  - Wau: Rudolf Deng Majak (70.51 , 15.51 )
  - Yei: Erkolano Lodu Tombe (68.03 , 25.12 )
- **Khartoum:** Gabriel Zubeir Wako, Cardinal (70.19 , 36.39 , 29.57 )
  - Daniel Adwok, Auxiliary Bishop (58.44 , 18.58 )
  - El Obeid: Macram Max Gassis, M.C.C.I. (72.62 , 23.14 )
    - Michael Didi Adgum Mangoria, Coadjutor Bishop (52.34 , 0.93 )
- Nunciature to Sudan: Leo Boccardi, Apostolic Nuncio (58.05 , 4.30 )

<sup>65</sup> *Catholic Church in Sudan*. Catholic-Hierarchy.org, February 19, 2011. <http://www.catholic-hierarchy.org/country/bsdqv.html> (accessed March 2011).



## Appendix E

### Human Rights Index (PTS) Comparison<sup>66</sup>

Table 1  
Examples of Difference in PTS and CIRI Scoring

<i>Countries</i>	<i>Year</i>	<i>PTS</i>	<i>CIRI</i>	<i>Others States in Same PTS Category</i>	<i>Other States in Same CIRI Category</i>
Angola	1986	5	4	Afghanistan, South Africa, Suriname	Poland, Senegal, South Korea
Philippines	2000	4	8	Israel, Nepal, Cameroon	Iraq, Sri Lanka, Afghanistan
Morocco	1990	3	7	Albania, Mexico, Vietnam	Guatemala, Cambodia, Iran
Chile	1998	2	6	Kuwait, Latvia, South Korea	Kenya, China, Turkey
U.K.	1991	1	4	New Zealand, Botswana, Denmark	Uganda, Bangladesh, Vietnam

Note: CIRI scores have been inverted for comparison. Herein, an "8" in the "CIRI" category represents the worst possible score while a "0" reflects the absence of each of the types of abuse considered.

<sup>66</sup> *The Political Terror Scale (PTS): A Re-introduction and a Comparison to CIRI*. Human Rights Quarterly, Volume 32, Number 2, May 2010, pp.367-400. <http://www.catholic-hierarchy.org/country/bsdqv.html> (accessed April 2011).

## Appendix F

### Water Conflicts in the Horn of Africa<sup>67</sup>

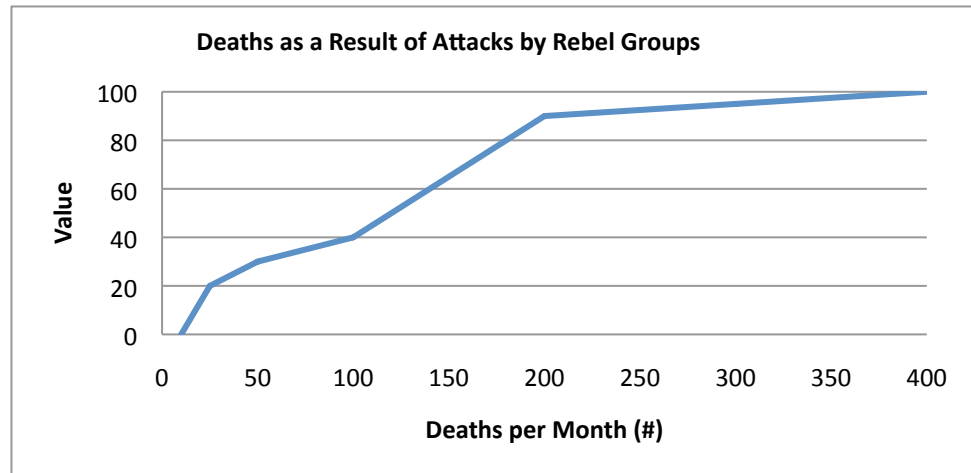


<sup>67</sup> *Water Conflict Chronology Map*. WorldWater.org, 2011. <http://www.worldwater.org/conflict/map/> (accessed April 2011).

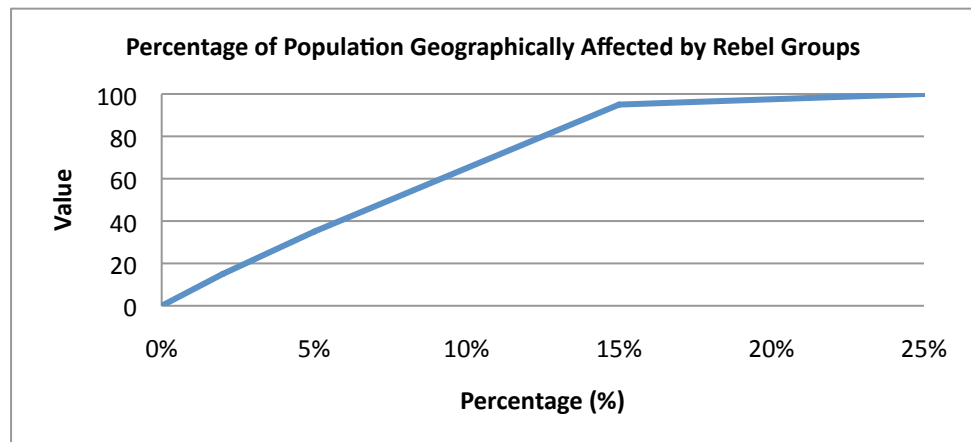
## Appendix G

### Indicator Value Function and Graph for Security

Deaths per Month	
x	Value
0	0
10	0
25	20
50	30
100	40
200	90
300	95
400	100
500	100



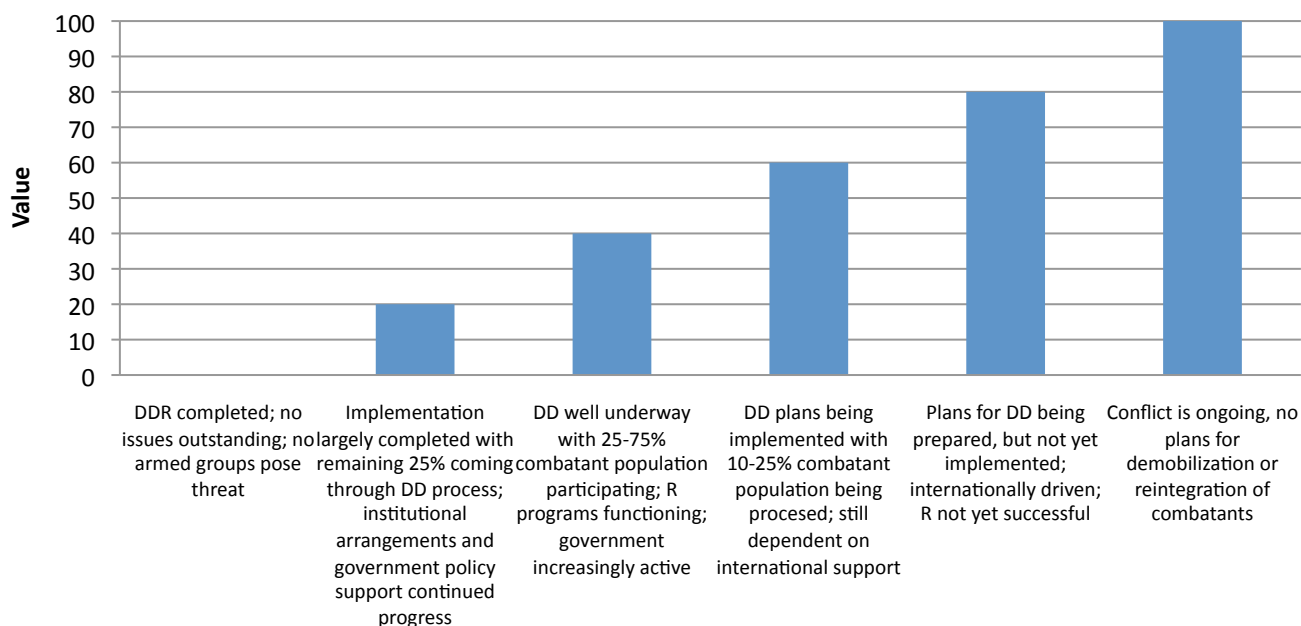
Percentage	
x	Value
0%	0
2%	15
5%	35
15%	95
25%	100
100%	100



### Disarmament, Demobilization and Reintegration (DDR)

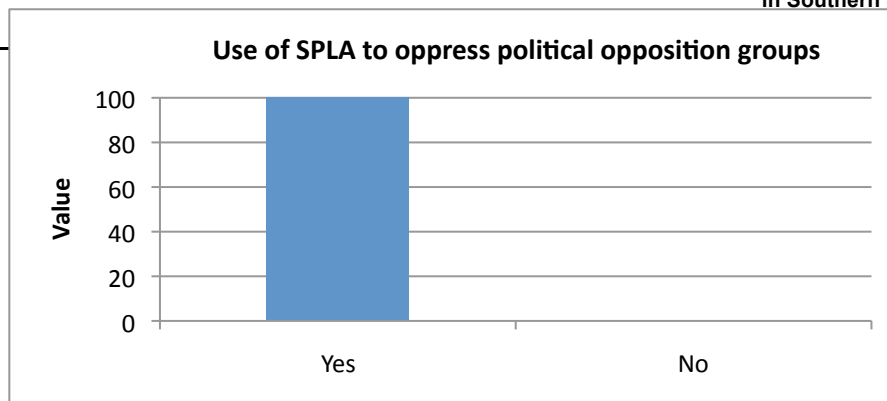
Rating	Value
DDR completed; no issues outstanding; no armed groups pose threat	0
Implementation largely completed with remaining 25% coming through DD process; institutional arrangements and government policy support continued progress	20
DD well underway with 25-75% combatant population participating; R programs functioning; government increasingly active	40
DD plans being implemented with 10-25% combatant population being processed; still dependent on international support	60
Plans for DD being prepared, but not yet implemented; internationally driven; R not yet successful	80
Conflict is ongoing, no plans for demobilization or reintegration of combatants	100

**Effectiveness of DDR**

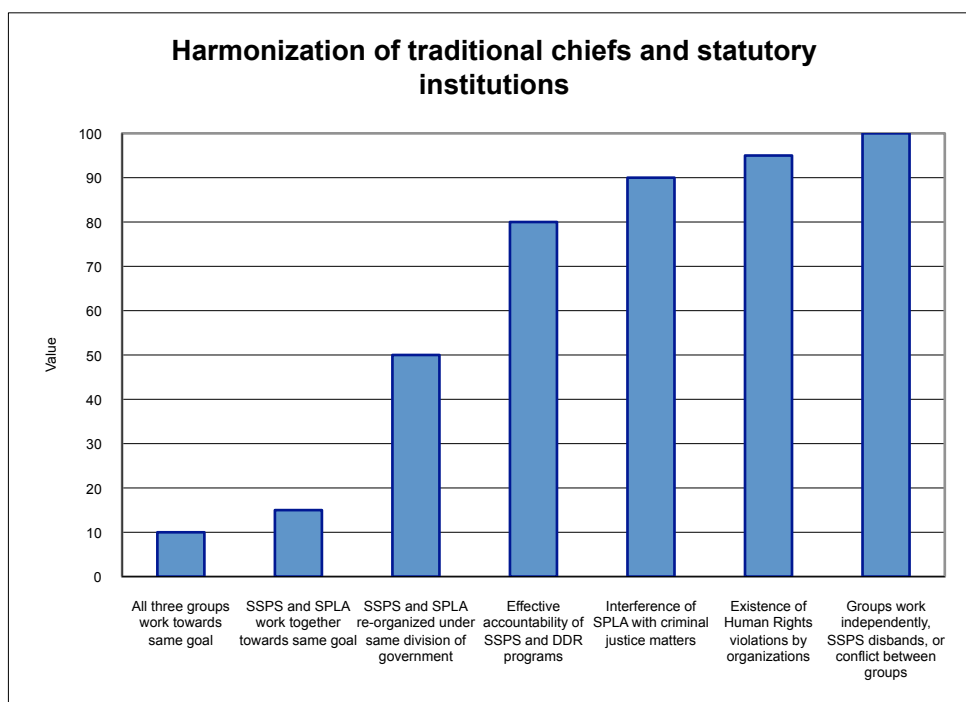




Existence?	
x	Value
Yes	100
No	0

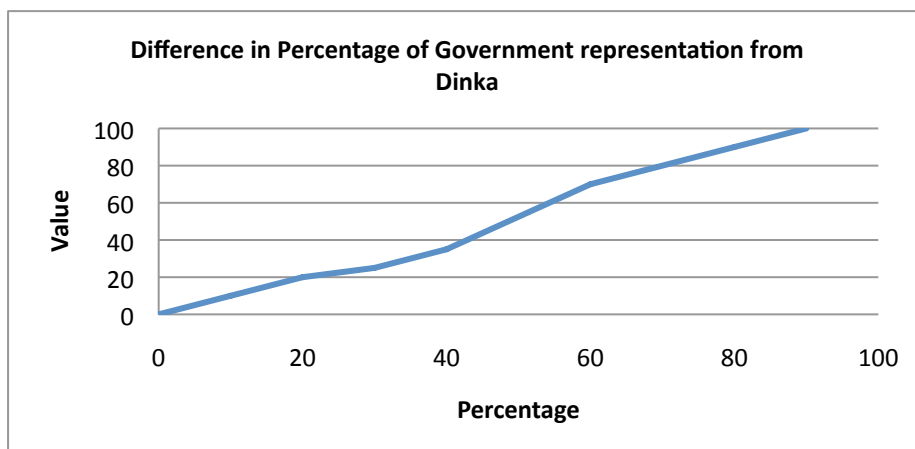


Collaboration	
x	Value
All three groups work towards same goal	10
SSPS and SPLA work together towards same goal	15
SSPS and SPLA re-organized under same division of government	50
Effective accountability of SSPS and DDR programs	80
Interference of SPLA with criminal justice matters	90
Existence of Human Rights violations by organizations	95
Groups work independently, SSPS disbands, or conflict between groups	100

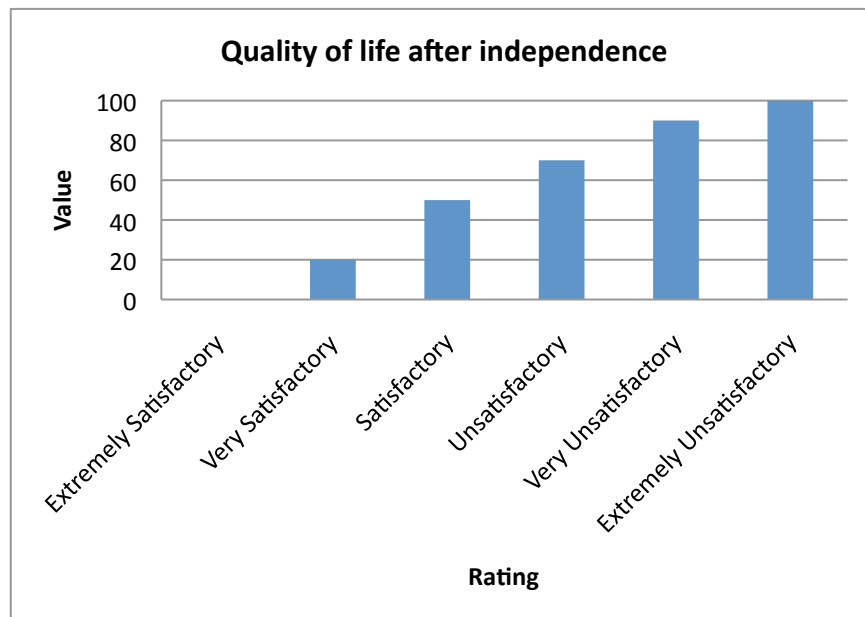


## Appendix H Indicator Value Function and Graph for Governance

Government Representation	
x	Value
0	0
10	10
20	20
30	25
40	35
60	70
80	90
90	100
100	100

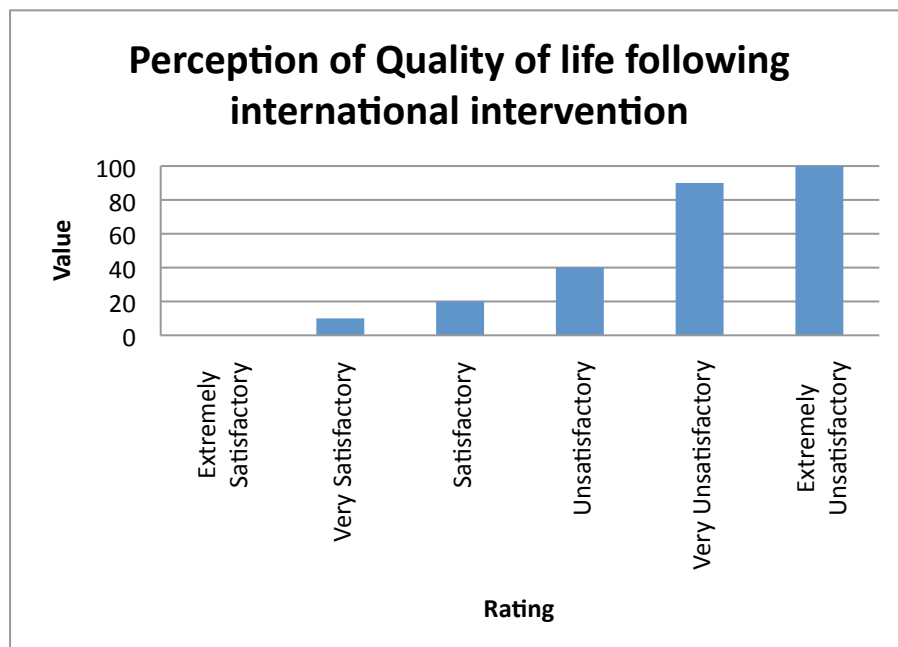


Quality of life	
x	Value
Extremely Satisfactory	0
Very Satisfactory	20
Satisfactory	50
Unsatisfactory	70
Very Unsatisfactory	90
Extremely Unsatisfactory	100

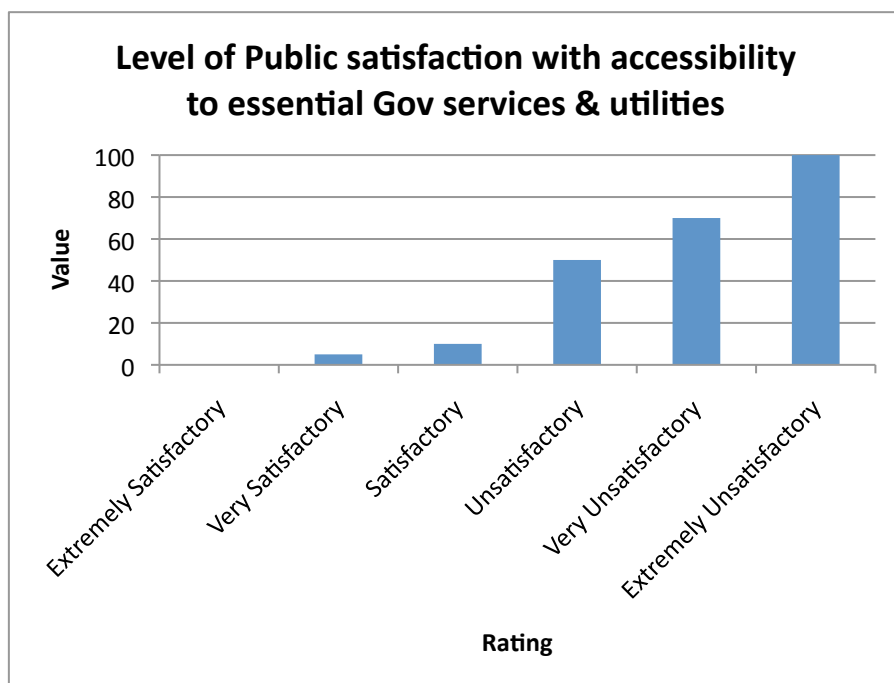




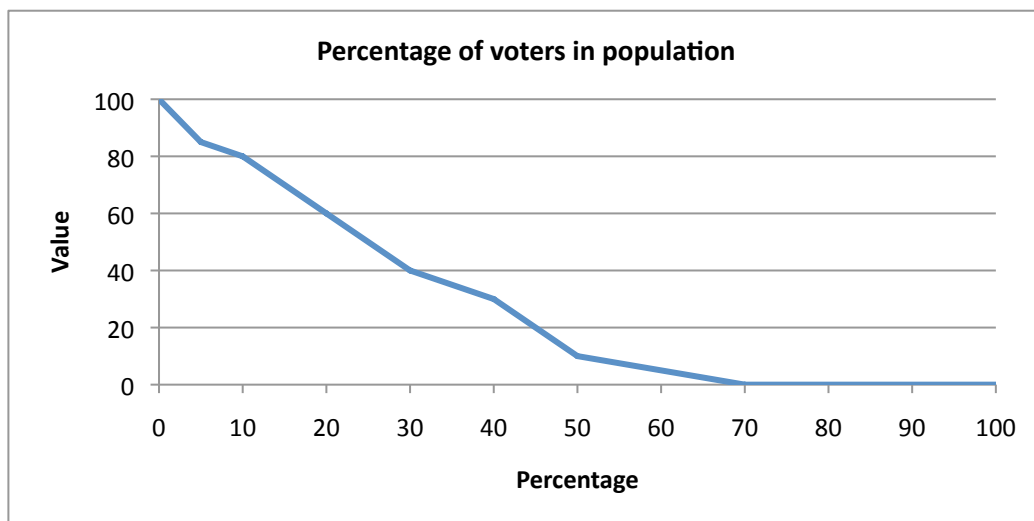
Perception of Quality of life following international intervention	
x	Value
Extremely Satisfactory	0
Very Satisfactory	10
Satisfactory	20
Unsatisfactory	40
Very Unsatisfactory	90
Extremely Unsatisfactory	100



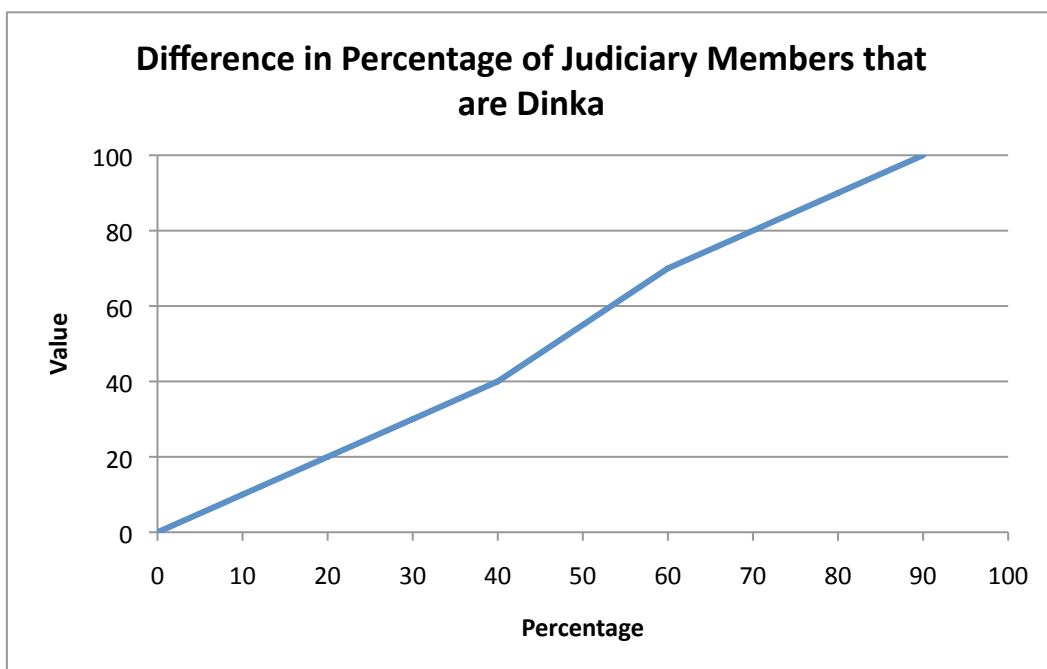
Government services & utilities	
x	Value
Extremely Satisfactory	0
Very Satisfactory	5
Satisfactory	10
Unsatisfactory	50
Very Unsatisfactory	70
Extremely Unsatisfactory	100



Percentage of voters in population	
x	Value
0	100
5	85
10	80
20	60
30	40
40	30
50	10
70	0
100	0

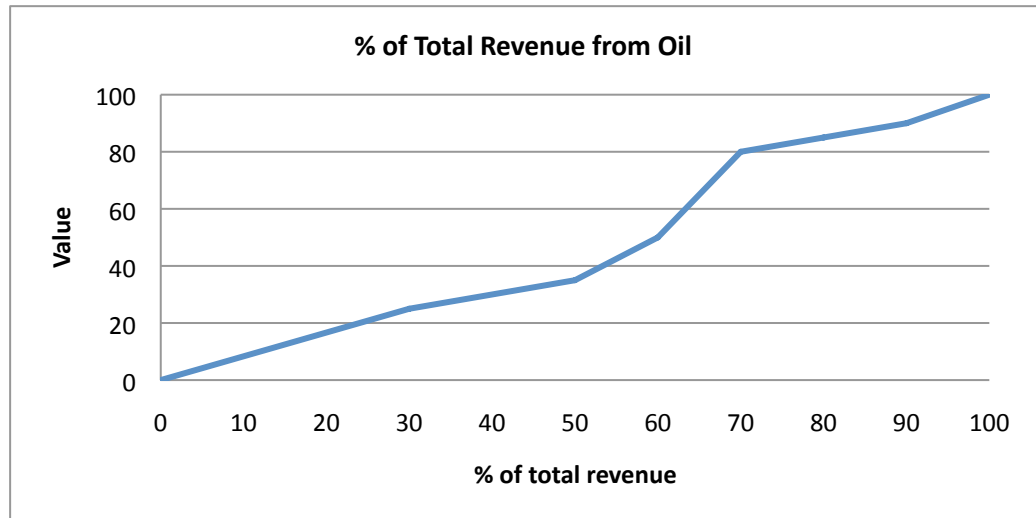


Judiciary representation	
x	Value
0	0
10	10
20	20
30	30
40	40
60	70
80	90
90	100
100	100

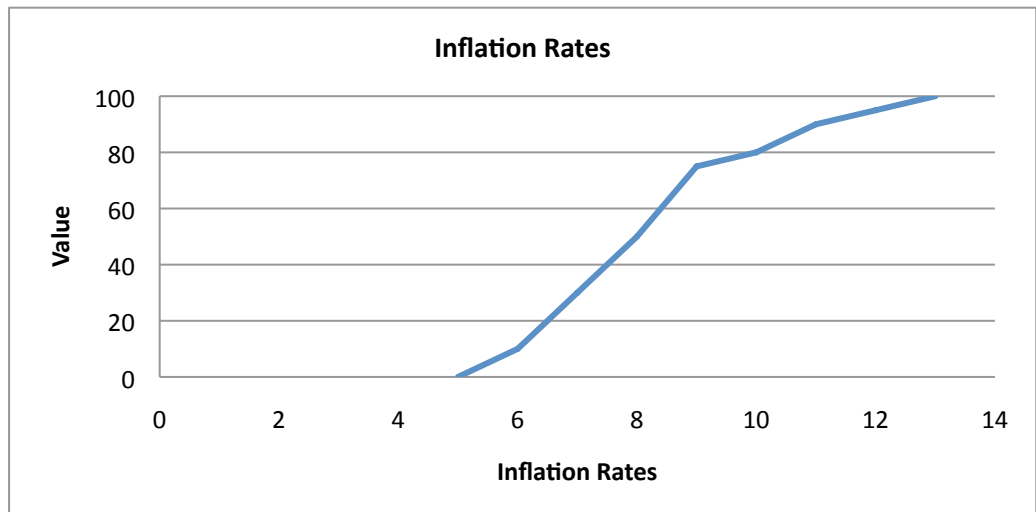


## Appendix I Indicator Value Function and Graph for Economy

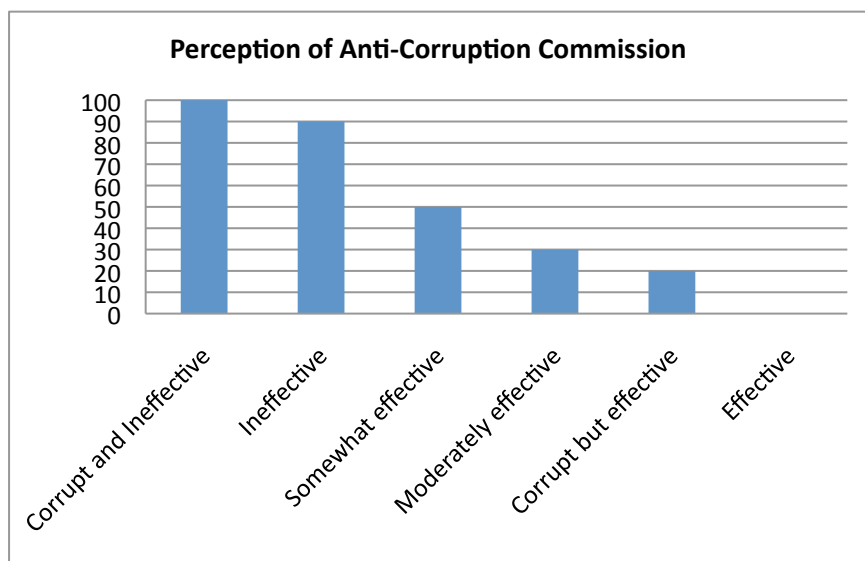
Percentage	
x	Value
0	0
30	25
50	35
60	50
70	80
80	85
90	90
100	100



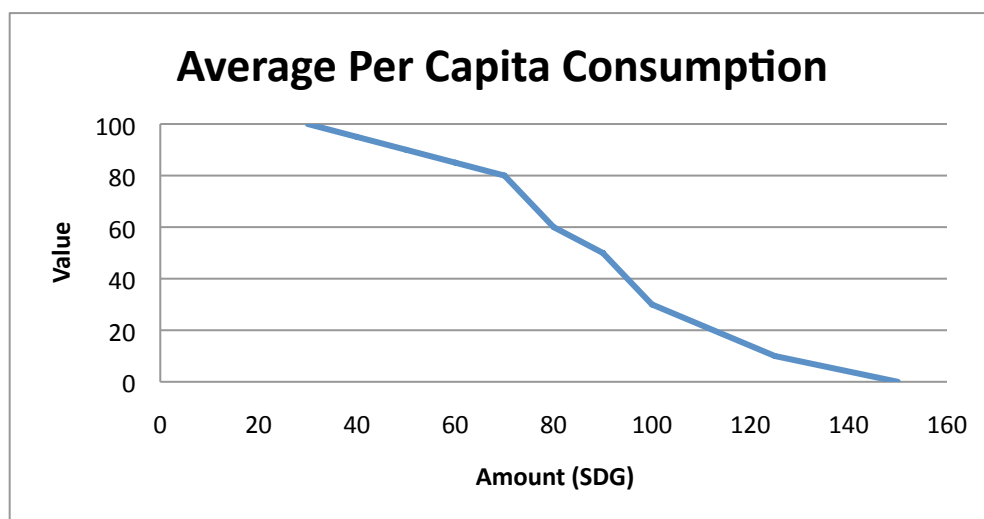
Inflation (%)	
x	Value
0	0
5	0
6	10
7	30
8	50
9	75
10	80
11	90
12	95
13	100
100	100



Effectiveness		
x		Value
Corrupt and Ineffective	and	100
Ineffective		90
Somewhat effective		50
Moderately effective		30
Corrupt but effective	but	20
Effective		0

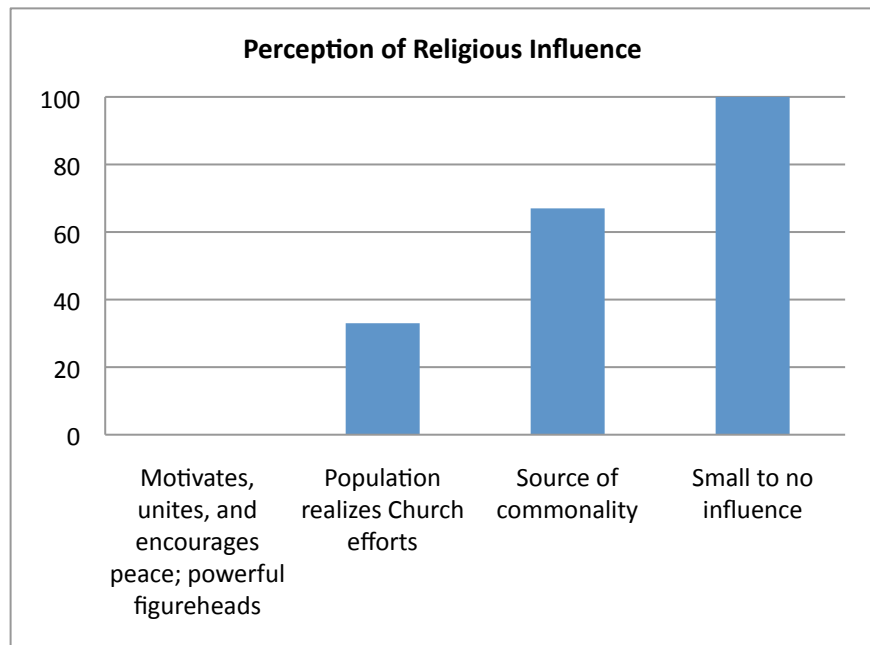


Average Per Capita Consumption (SDG)	
x	Value
0	100
30	100
40	95
50	90
60	85
70	80
80	60
90	50
100	30
125	10
150	0
175	0

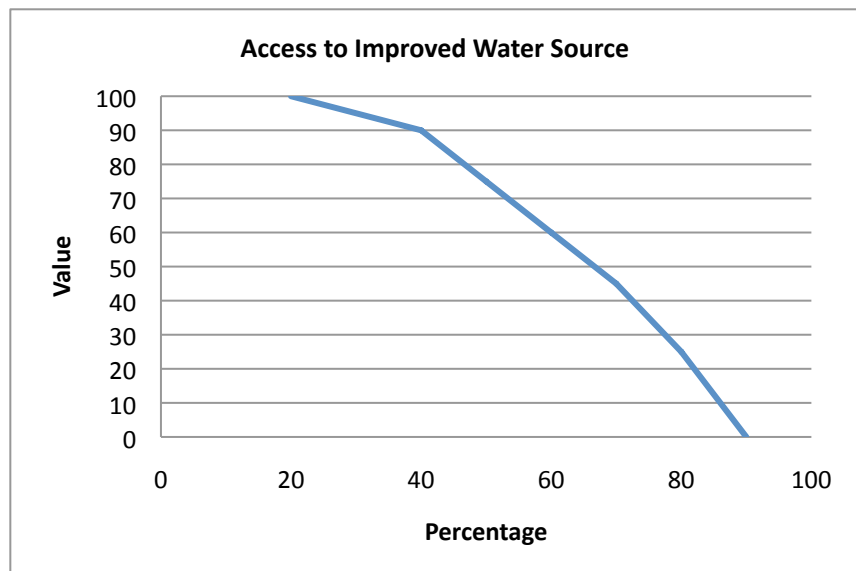


## Appendix J Indicator Value Function and Graph for Social

Perception of Religious Influence	
Rating	Value
Motivates, unites, and encourages peace; powerful figureheads	0
Population realizes Church efforts	33
Source of commonality	67
Small to no influence	100

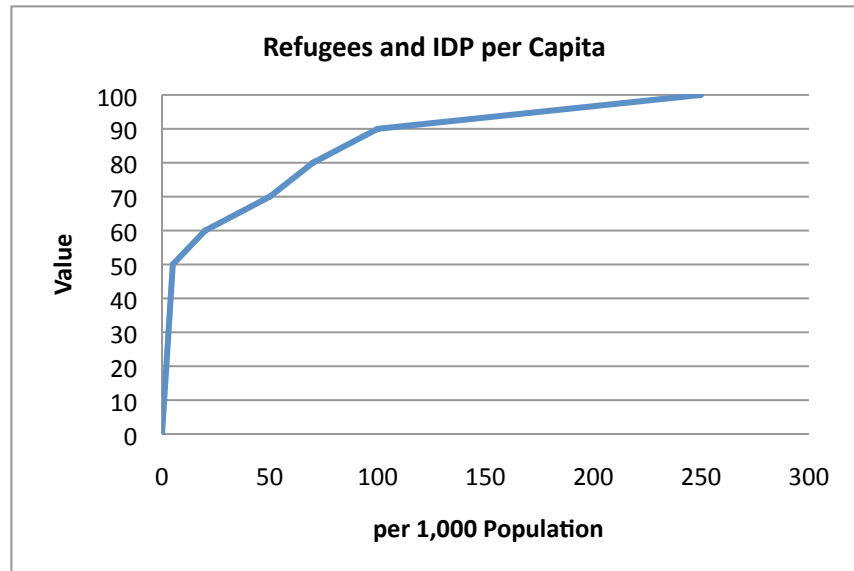


Access to Improved Water Source	
Percentage	Value
10	100
20	100
40	90
50	75
60	60
70	45
80	25
90	0
100	0





Refugees and IDP per Capita	
per 1,000 Population	Value
0	0
5	50
20	60
50	70
70	80
100	90
250	100
300	100

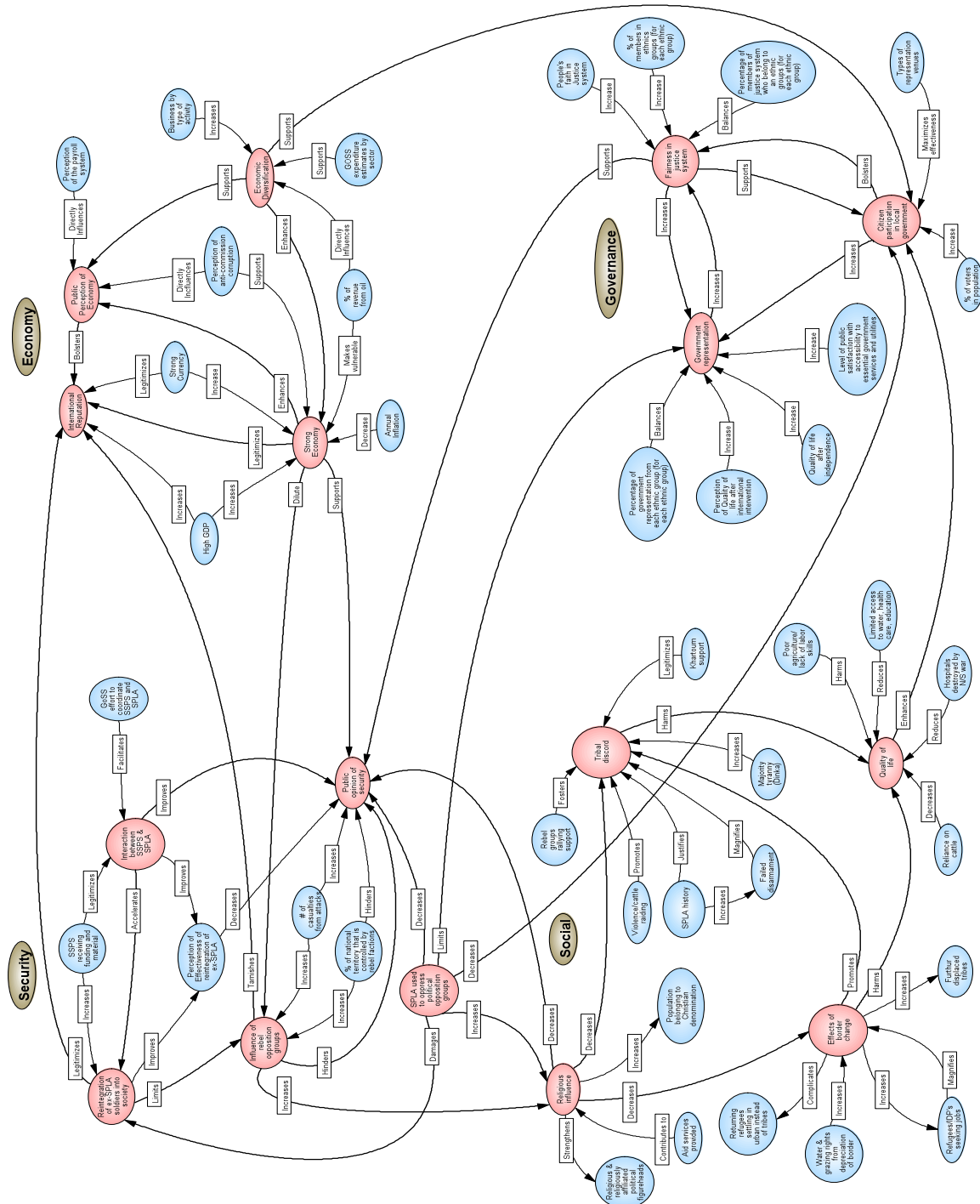


Human Rights Index	
Rating	Value
A	0
B	20
C	60
D	90
E	100

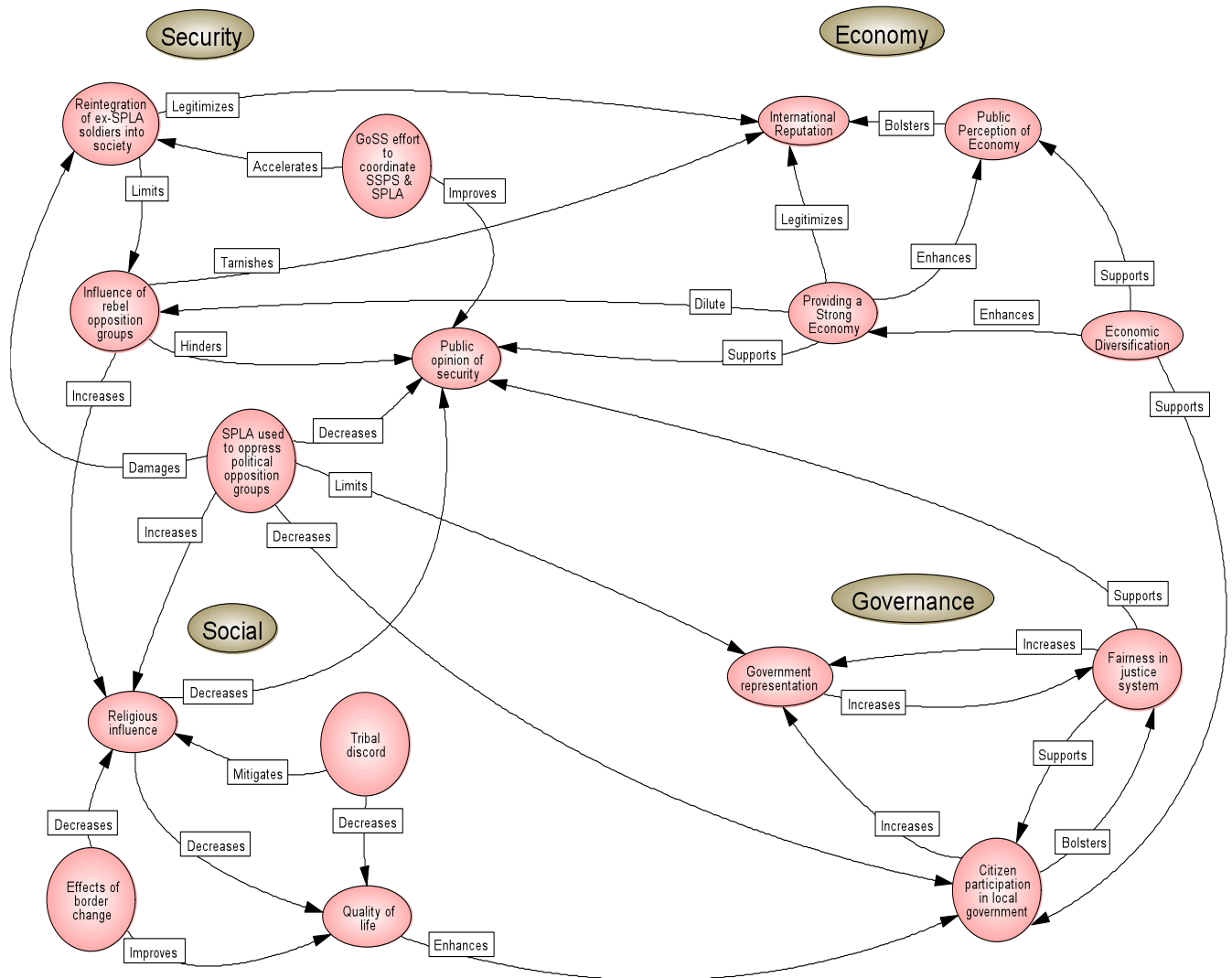




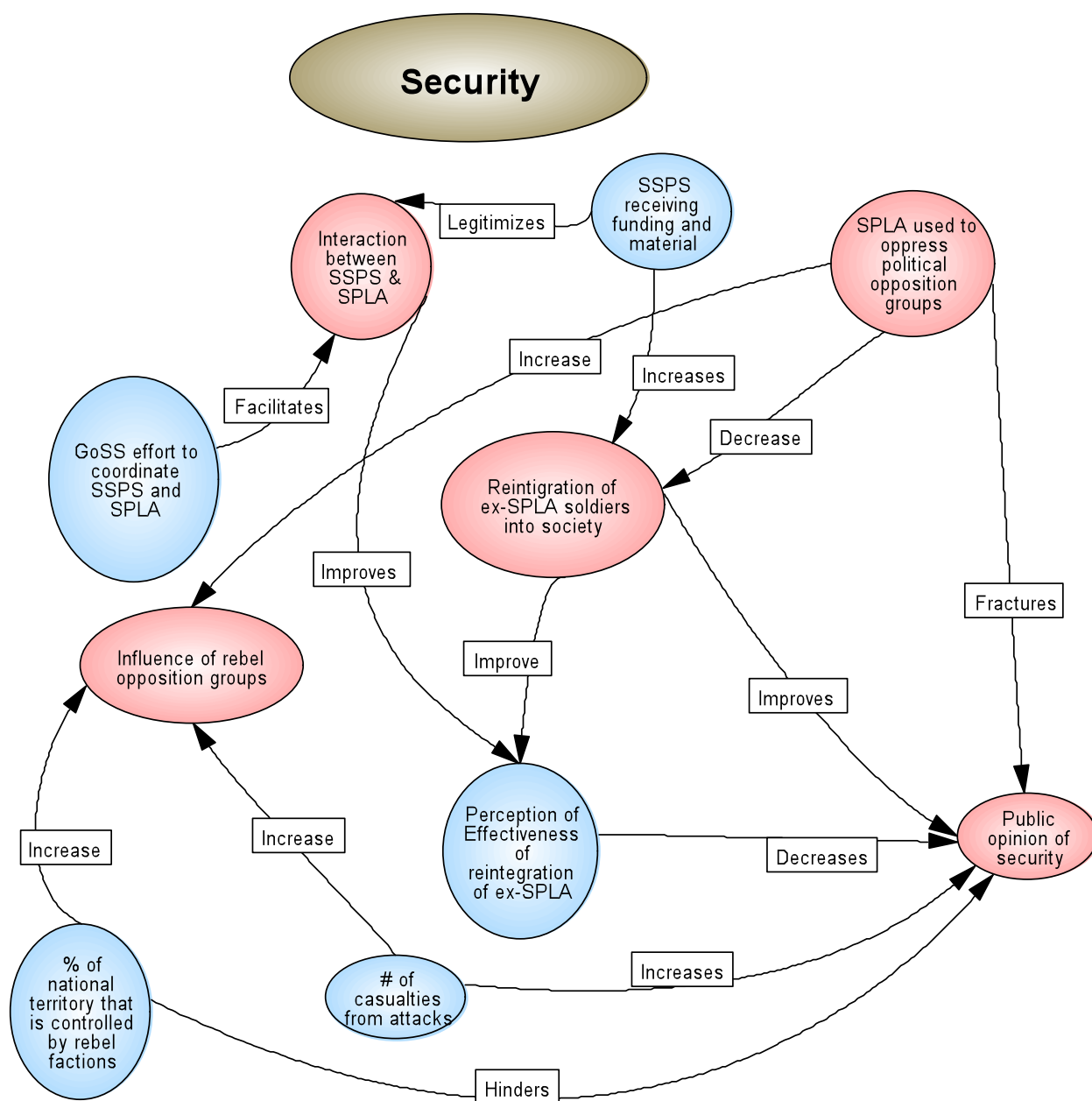
## Appendix K Combined Systemigram – Functions, Objectives and Indicators



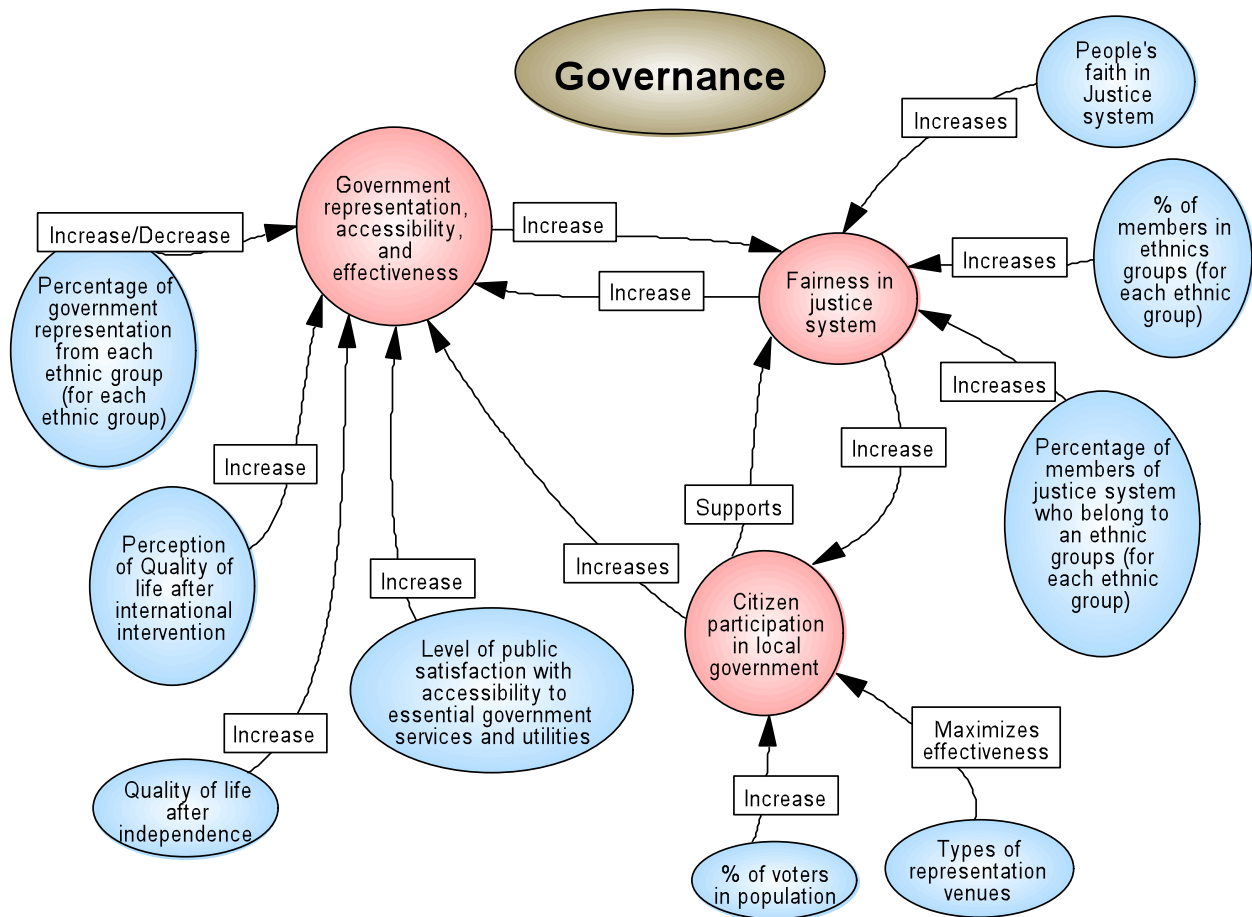
## Appendix L Combined Systemigram – Functions and Objectives



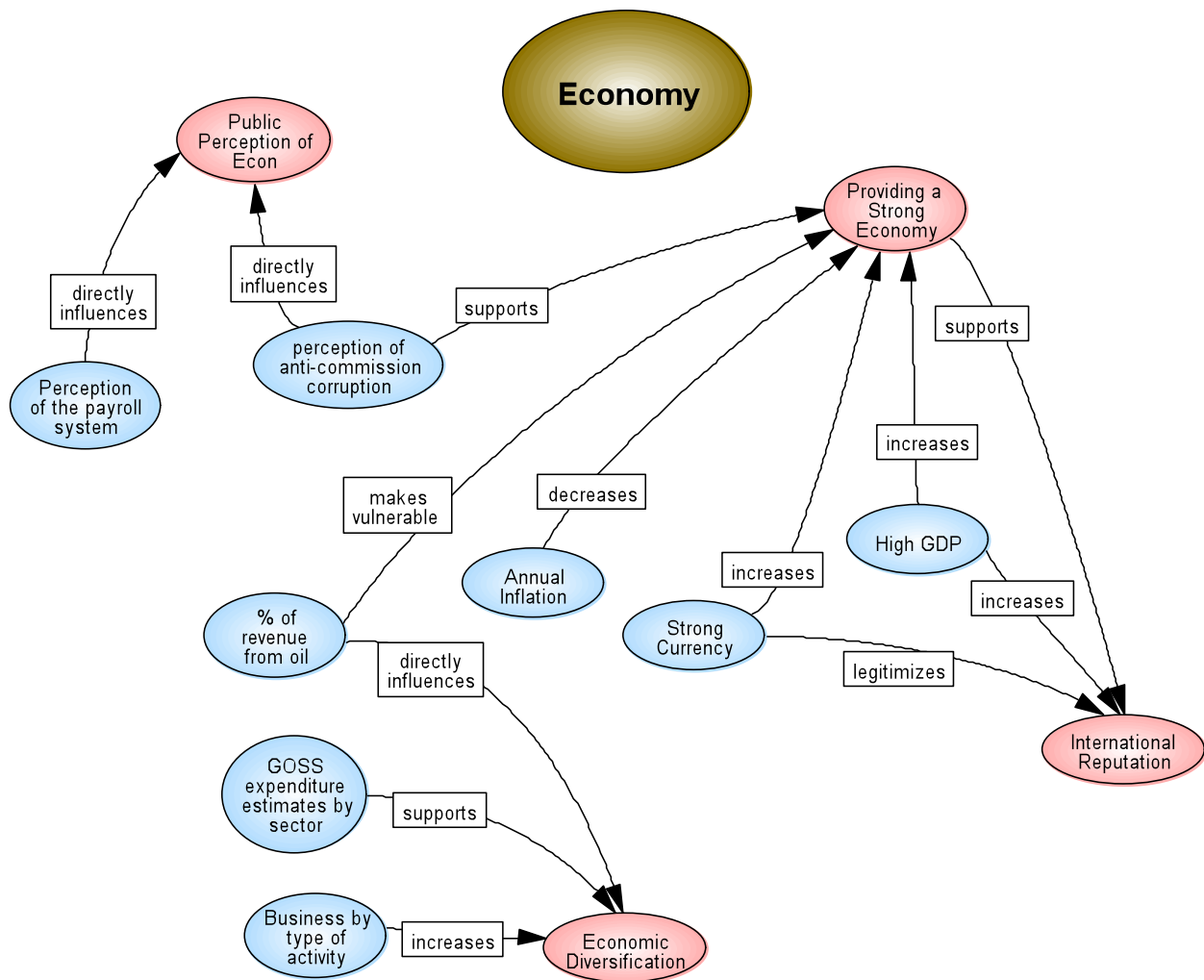
## Appendix M Security Systemigram



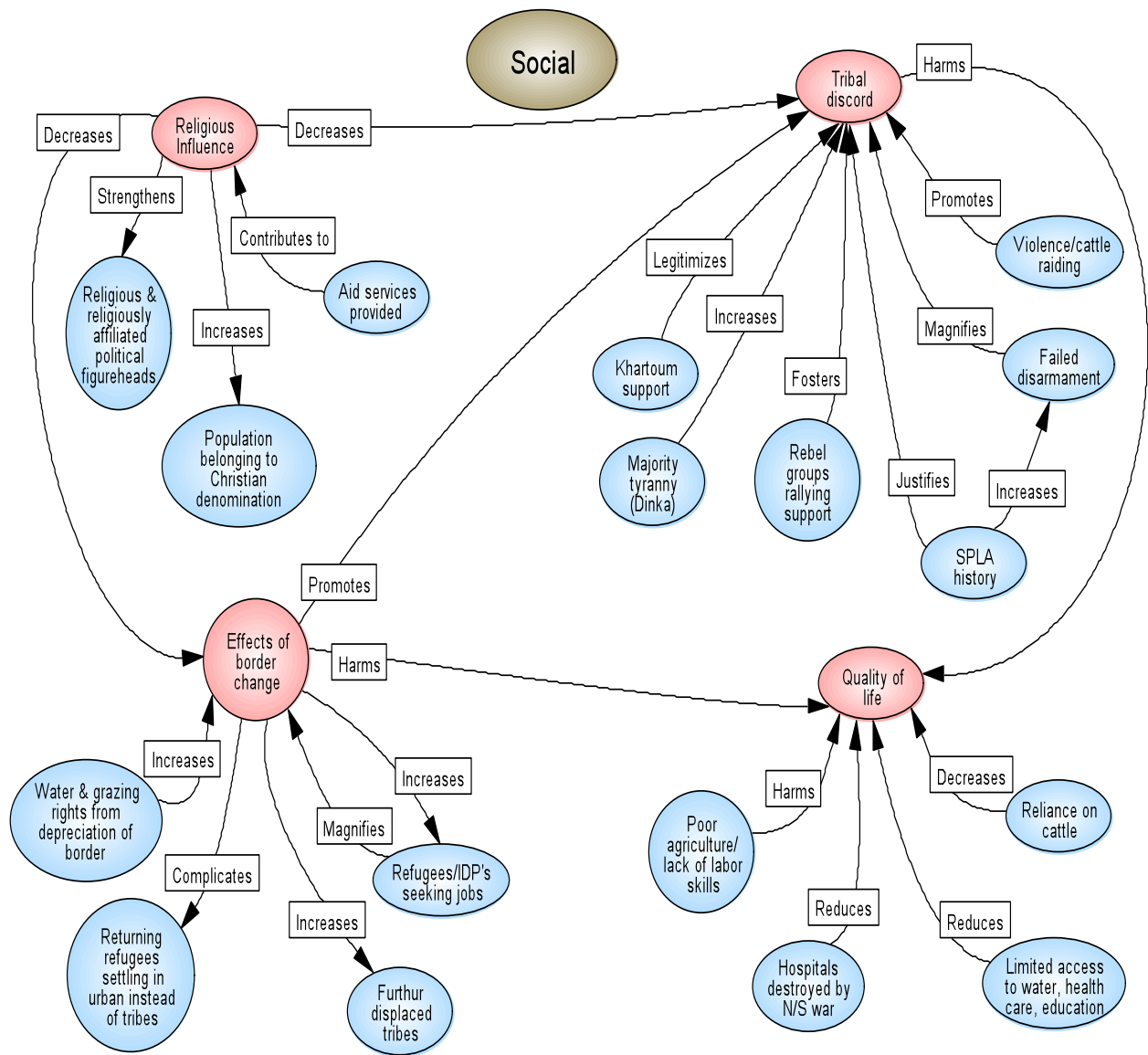
## Appendix N Governance Systemigram



## Appendix O Economy Systemigram



## Appendix P Social Systemigram





## Appendix Q

### Input Matrix – Initial, Best Case Scenario

Indicator (Range of Input)	Input (Raw Data)	Relative Score (out of 100)
<b>Security</b>		
Casualties per Month as a Result of Attacks by Rebel Groups (# between 0-400)	0	0
Percentage of population geographically affected (%) (0-100)	0	0
Perception of Effectiveness of Reintegration (Drop-Down Menu)	DDR completed; no issues outstanding; no armed groups pose threat	0
Use of SPLA to oppress political opposition groups (Drop-Down Menu)	No	0
Harmonization of Boma chiefs, SSPS, SPLA (Drop-Down Menu)	All three groups work towards same goal	10
<b>Economy</b>		
Percent of Total Revenue from Oil (0-100)	0	0
Inflation Rates (0-100)	0	0
Perception of anti-commission corruption (Drop-Down Menu)	Effective	0
Average Per Capita Consumption (SDG) (# between 0-150)	150	0
<b>Social</b>		
Perception of religious influence (Drop-Down Menu)	Motivates, unites, and encourages peace; powerful figureheads	0
Human Rights Index (Drop-Down Menu)	A	0
Refugees and IDP per Capita (0-250)	0	0
Percent Population with Access to Improved Water Source (0-100)	100	0
<b>Governance</b>		
Percentage of government representation Dinka (0-100)	0	0
Quality of life after independence (Drop-Down Menu)	Extremely Satisfactory	0
Perception of Quality of Life Following International intervention (Drop-Down Menu)	Extremely Satisfactory	0
Level of public satisfaction with accessibility to essential government services and utilities (Drop-Down Menu)	Extremely Satisfactory	0
Percentage of voters in population (0-100)	100	0
Percentage of Dinka Judiciary members (0-100)	0	0

<b>TOTAL LIKELIHOOD OF CIVIL WAR</b>	<b>1</b>
--------------------------------------	----------

## Appendix R

### Input Matrix – Current Sample Data

Indicator (Range of Input)	Input (Raw Data)	Relative Score (out of 100)
<b>Security</b>		
Casualties per Month as a Result of Attacks by Rebel Groups (# between 0-400)	76	35
Percentage of population geographically affected (%) (0-100)	0.08	53
Perception of Effectiveness of Reintegration (Drop-Down Menu)	Implementation largely completed with remaining 25% coming through DD process; institutional arrangements and government policy support continued progress	20
Use of SPLA to oppress political opposition groups (Drop-Down Menu)	Yes	100
Harmonization of Boma chiefs, SSPS, SPLA (Drop-Down Menu)	Interference of SPLA with criminal justice matters	50
<b>Economy</b>		
Percent of Total Revenue from Oil (0-100)	93	93
Inflation Rates (0-100)	11.7	94
Perception of anti-commission corruption (Drop-Down Menu)	Somewhat effective	50
Average Per Capita Consumption (SDG) (# between 0-150)	100	30
<b>Social</b>		
Perception of religious influence (Drop-Down Menu)	Population realizes Church efforts	33
Human Rights Index (Drop-Down Menu)	E	100
Refugees and IDP per Capita (0-250)	123	92
Percent Population with Access to Improved Water Source (0-100)	70	45
<b>Governance</b>		
Percentage of government representation Dinka (0-100)	13	13
Quality of life after independence (Drop-Down Menu)	Very Satisfactory	20
Perception of Quality of Life Following International intervention (Drop-Down Menu)	Satisfactory	20
Level of public satisfaction with accessibility to essential government services and utilities (Drop-Down Menu)	Unsatisfactory	50
Percentage of voters in population (0-100)	65	3
Percentage of Dinka Judiciary members (0-100)	50	55

<b>TOTAL LIKELIHOOD OF CIVIL WAR</b>	<b>51</b>
--------------------------------------	-----------

## Appendix S

### Stakeholder Requirements and Subject Matter Experts Interviews

#### S.1 Professor Dave Davis (AFRICOM)

Professor David F. Davis is currently on sabbatical as an Operations Research Analyst, Resources Division, OR Branch, and AFRICOM from his permanent position Research Professor and Co-director of the Peace Operations Policy Program at George Mason University. He was our primary stakeholder and main point of contact throughout the project. Our products were developed specifically to meet the needs of AFRICOM.

Initial guidance was to develop some type of analytical approach to assess the potential for conflict in South Sudan. We were to develop a weighted scoring approach to post conflict indicators in Sudan. From there we conducted our research and sent him our work and contacted him directly via teleconference.

Initial reaction from his review was that the indicators are very "western" centric and will prove deficient as conflict indicators. Specifically, his comments included:

- I would relook indicators after reviewing additional literature like Small Arms Survey and speaking with Mr. Jon Temin from United States Institute of Peace (USIP).
- It is a good start, but a lot of work is ahead of them. They should expand the research, conduct an operational design, and re-look their conceptual model.
- What I am seeing in the indicators shows me that the authors have simply done a cursory read of the literature on security in post-conflict settings. There is very little that indicates an understanding of the factors specific to Sudan. I would recommend that the authors spend some time reading the literature at the following website [www.smallarmssurveysudan.org](http://www.smallarmssurveysudan.org).
- I am also attaching a recently completed very good review of the current security situation done by USAID.
- Here are some recommended initial conflict indicators that could be monitored;
  - Economics
    1. Economic and Inflation trends
    2. Debt management – Especially any with the North
    3. Budget balancing and allocations that impact social services, education, housing, health etc., that could cause conflict
    4. Trade-The increase and/or decrease in Imports/Exports and possibly GNP trends
    5. Any new Economic Policies that could cause conflict internally or externally
    6. Currency
  - Military Forces
    1. Current size and allocation of forces
    2. Current and future locations of these forces
    3. Increased or decrease of military forces on the border
    4. Increase or decrease of military assets (people and equipment) and their location. Do they appear to be going in a defensive or offensive mode. Public perception of military forces
  - Societal Issues
    1. Current and planned continuance of internal and externally supported (UN programs) social services (health, education, etc.)
    2. Increase and/or decrease in public services - housing, electricity etc.
    3. Socio-cultural issues to monitor- Religious primarily
  - Political
    1. What will the new form of government be and its impacts on the populace and external relationships.

2. New policies that effect internal and external relationships.
  3. How will the political decisions be made and effect the north, neighbors and externals.
- A great start to an interesting project. As for the presentation:
    - History really seems to downplay the role of the British during the 19th century
    - Slide 13: North and South are different in a LOT of ways; religion is only one difference and less important than the racial & economic differences that pre-date established religions in the area (Burr and Collins cover this)
    - Slide 18: separation is not all about oil. The effect separation had on regime survival was more important.
  - An excellent resource includes:
    - Darfur: the long road to disaster By Millard Burr, Robert O. Collins
    - Ted Robert Gurr, Why Men Rebel (Princeton, N.J.: Princeton University Press, 1970), tough reading but still a classic
    - James C. Davies, "Towards a Theory of Revolution," American Sociological Review 27, no. 1 (1962)
    - Davies' theory of rising expectations is especially relevant to the current situation in South Sudan.
  - The empirical quality of their research would be greatly enhanced if they choose a definition for post-conflict versus conflict, and then attempt to apply it to South Sudan.
  - How many deaths count as conflict? Between which forces?
  - Since 2005, the South has had to contend with tribal conflicts and militia defections. Does those count as internal conflict?
  - Is this a study on internal conflict in Southern Sudan or the possibilities for renewed conflict between north and south?

After the initial comments were addressed the following feedback was received:

- Systemigram
  - Do not place preference. Ex: *negative* effects of borders, *maximize* citizen participation
  - Voting: not taking into account minority voting rate
  - GoSS effort to coordinate SSPS and SPLA – go into more detail
  - Security: seems “different” than the other Systemigrams. Is it because it is harder to understand? Is it because we are military personnel and make too many assumptions?
    - Break up casualties by type
    - Loss ratios to measure effectiveness. Look into the CAA
    - Potential Point of Contact: Dr. Karston Englemann, USARAF and Center for Army Analysts, Ft. Belvoir
- Economy Indicators
  - Look into “Dutch disease” – when a country relies on one source of revenue, in this case, oil
  - Convert consumption into USD. Consider looking into Juba itself
- Governance Indicators
  - Look into the level of public satisfaction in Somalia. Their issue is wondering who do they get services from?
  - Potential Point of Contact: Jeff Fischer, George Mason University, for information on the percentage of judiciary members
- Security Indicators
  - DDR: What does the R stand for? Taking weapons away can cause problems. It is more about demobilization.
- General Comments
  - Do not use 4<sup>th</sup> polynomial equations. Our data will never be perfect enough to match it.
  - Do not show the equation or line of best fit on the graphs
  - Ensure our indicators are justified on the Systemigram
  - Clarify value scoring. Does high value mean conflict is likely or does low value mean conflict is likely?
  - Remember to think about the interconnectivity of the different indicators

- For each indicator, make a judgment on the frequency at which these statistics change
- The product will go to the Somalia Games using models to predict conflict
- Future work will include developing a Bayesian Network to enhance the model's ability to account for interconnectivity between the indicators.

## S.2 Mr. John Dau (Lost Boys of Sudan)

John Dau is a Southern Sudanese man who fled Sudan in 1987 because of religious violence during the civil war.<sup>68</sup> One of many refugees during this time period, the group of displaced young men became known as the "Lost Boys of Sudan." From the time he left Sudan in 1987, he did not arrive to his permanent address in Syracuse, New York for fourteen years.<sup>69</sup> In this time period, he walked over 1,000 miles to Kenya where he would then be in and out of different refugee camps until brought to the United States. Mr. Dau (or Dhieu Deng Leek) is a figurehead for the Lost Boys of Sudan and does public speaking. Mr. Dau has also written a book on his experiences entitled *God Grew Tired of Us*, and is the head of three separate foundations to improve the quality of life in Southern Sudan.<sup>70</sup>

After speaking with our primary stakeholder for the research, Professor Davis, he told us that the project should not only include a Western perspective on the conditions of Africa, but also an African perspective. This led us to search for potential displaced Sudanese citizens in the United States. This is where we first heard of the Lost Boys of Sudan. After failing to reach the Chicago chapter through their official website, we turned to a classmate of ours, Cadet Jenny Dunten, who went to high school in Chicago and told us that she knew some of the Lost Boys. Cadet Dunten put us in contact with a friend of hers who was unavailable. Fortunately, his cousin was John Dau, and we began to form a relationship with Mr. Dau.

At this point in our research, we had already established baseline indicators to determine the stability of Southern Sudan. Mr. Dau served as a way to validate our information and also provide us with new information that may not have been represented through NGOs.

On March 25, 2011, two members of our team traveled down to Washington D.C., where Mr. Dau was attending a rally on Abyei (one of the conflicted regions of Sudan). We were fortunate enough to spend approximately two hours alone with Mr. Dau to discuss our project and the current situation in Sudan.

Once we outlined the concept of our project to Mr. Dau, he was quick to share his breadth of knowledge with us. The first piece of information he gave us, which would be helpful in all aspects of the project was that the number one issue in Southern Sudan right now was the existence of what Mr. Dau called "proxy armies".<sup>71</sup> Mr. Dau considers the rebel groups as proxy armies of the North. He (as well as many Southern Sudanese) believes that the North funds and supports these armies in order to disrupt Southern Sudan's chances of being successful with their sovereignty. Mr. Dau believes that the North sponsors these proxy armies for many reasons. Mr. Dau states that there is no way these armies get resources other than from Khartoum; he states that a Northern helicopter was captured by Sudanese People's Liberation Army (SPLA) forces.<sup>72</sup> Although this concept of the public perception of Northern involvement with Southern rebel armies was informative, there was no practicality of using it as a metric in our project. However, the rebel groups were a major concern.

These rebel factions have defected from the Sudanese People's Liberation Army and now oppose them. Mr. Dau says that the reasons they exist are because during the civil war with the North, the SPLA was the primary security force, but there were also Other Armed Groups (OAGs).<sup>73</sup> OAGs were

---

<sup>68</sup> John Dau. "John's Story" *The John Dau Foundation* <http://johndaufoundation.org/johns-story>

<sup>69</sup> Ibid.

<sup>70</sup> Ibid.

<sup>71</sup> John Dau. Personal Interview. Washington D.C., March 25, 2011.

<sup>72</sup> Ibid.

<sup>73</sup> Ibid.

geographically isolated, often had the same ideals as the SPLA, and served as defense forces for the people of their districts. Once the CPA was signed in 2005, plans were made to integrate all of these forces into the SPLA. On January 9, 2006, the OAGs were integrated.<sup>74</sup> However, the leaders of these OAGs inflated their ranks and the ranks of their troops prior to the integration. This caused a controversy over what their ranks should be in the SPLA.<sup>75</sup> Another big factor that would cause conflict later is that the troops from the OAGs remained loyal to the generals they fought with and not the SPLA leaders.<sup>76</sup>

In one of the larger rebel armies in Southern Sudan, George Athor, a general of an OAG, defected from the SPLA and took his troops with him. Athor was snubbed for a position that he believed he deserved.<sup>77</sup> Athor's army operates in Jonglei state where he has clashed with the SPLA on multiple occasions resulting in hundreds of deaths of military as well as civilians. General Athor is just one of many defected OAG generals that have taken their armies with them.<sup>78</sup> These groups operated mainly out of Jonglei, Unity, and Upper Nile, but they are currently not united.

Of the 67 tribes in Southern Sudan, Mr. Dau spoke with us about the three most influential: Dinka, Nuer, and Shillinuk.<sup>79</sup> Mr. Dau explained how the SPLA is composed primarily of Dinka and Nuer. However, there was (and in many cases is) not always a happy marriage between the two tribes.<sup>80</sup> In 1991, the Nuer killed many Dinka. One of the leaders of these killings was the current Vice President of Southern Sudan, Riek Machar. Mr. Dau warns that this history has caused the Southern Sudanese people to distrust and dislike Machar.<sup>81</sup> The Shillinuk, who live primarily in Unity State (where there are many armed rebel groups) are a political opposition group to the SPLA. The SPLA's government half is known as the Sudan People's Liberation Movement (SPLM). The Shillinuk people belong primarily to the Sudan People's Liberation Movement – Democratic Change (SPLM-DC). Mr. Dau has stated that the threat of the SPLA being used to oppress political opposition is both real and relevant.<sup>82</sup>

An issue that Southern Sudan has always experienced is tribal violence. Due to the lack of established tribal boundaries, regions are often disputed resulting in conflict. This is evident in the problem of cattle rustling.<sup>83</sup> Mr. Dau believes that the government's weak implementation of disarmament and their inability to provide security increases the fear of tribal violence.<sup>84</sup> When asked about the personal security issue and crime prevention, Mr. Dau told us that there is a severe lack of effective police forces. He gave us an example of an area of Jonglei where there were only three policemen for 80,000 people.<sup>85</sup> This led us to do further research on the police issue in Sudan.

Mr. Dau brought up concerns with the competency of the government. He told us that the government lacks prioritization skills and the misuse of resources is very common.<sup>86</sup> Mr. Dau says that there is a lack of an infrastructure program. An example he gave us of a prioritization problem was that the government spent a lot of money on Toyotas for government officials, but they had not improved the roads yet. The cars were all broken in 2-3 years.<sup>87</sup>

---

<sup>74</sup> Ibid.

<sup>75</sup> Ibid.

<sup>76</sup> Ibid.

<sup>77</sup> John Dau. Personal Interview. Washington D.C., March 25, 2011.

<sup>78</sup> Ibid.

<sup>79</sup> Ibid.

<sup>80</sup> Ibid.

<sup>81</sup> Ibid.

<sup>82</sup> Ibid.

<sup>83</sup> Ibid.

<sup>84</sup> Ibid.

<sup>85</sup> Ibid.

<sup>86</sup> Ibid.

<sup>87</sup> Ibid.

Mr. Dau also told us that there was no distribution of wealth. Mr. Dau states that there are very few politicians and military leaders that have extravagant amounts of money and the remainder of the nation is poor.<sup>88</sup> This is a potential source for conflict.

At the end of our conversation with Mr. Dau, he looked over the indicators we had developed and gave us feedback verifying some and deleting others. Mr. Dau insight and subject matter expertise proved to be the most important resource for this project.

### S.3 Mr. Jon Temin (USIP)

Jonathan Temin is the director of the Sudan Program at the USIP. He travels to Sudan often and has published many papers on Sudan and Africa.<sup>89</sup>

We came into contact with Mr. Temin while doing initial research. His work on Sudan was useful to us, and his video interviews online were valuable and showed his breadth of knowledge and competency.<sup>90</sup> We contacted Mr. Temin over phone and email and scheduled a time to travel to Washington D.C. to meet with him.

On 16 February 2011 we traveled to DC to meet with Mr. Temin in the USIP offices. This was early in our research, and we had only a general concept of the situation in Sudan at this point. We still did not fully understand the problem at this point and did not know if we would be focusing on the North-South relationship or solely Southern Sudan. Mr. Temin was the first subject matter expert we consulted, and his advice put us on the right track for success.

Mr. Temin first gave us information on the security situation in Southern Sudan. He described how the Sudanese People's Liberation Army (SPLA) was the official army of Southern Sudan, but it had an ineffective command and control. Corruption was rampant in its Dinka dominated ranks, and the organization was predatory on smaller tribes.<sup>91</sup> He also brought up the issue of the current Demobilization, Demilitarization, and Reintegration (DDR) program. The SPLA is supposed to be downsizing (which it is doing slowly and ineffectively), and those that are being forced out of the army are not getting jobs elsewhere.<sup>92</sup> They need to make money for their families and are instead linking up with defected generals to form rebel opposition groups. Mr. Temin mentioned that the Southern Sudanese people believe these groups are backed by the North but there is no way to prove it.<sup>93</sup>

Mr. Temin stressed the fact that the Dinka's domination was unhealthy for Southern Sudan.<sup>94</sup> He notes an internal ethnic tension issue that is being downplayed by the national media in Southern Sudan. Salva Kiir, President of Southern Sudan, is also the leader of the SPLA. He was supposed to resign this position after the CPA of 2005 but did not. Also, Mr. Temin mentioned the conflict between the President and Vice President (Reik Machar) being from different tribes. He did not know what would happen if Kiir were killed. The people may not accept the Vice President as leader.<sup>95</sup>

The major categories that Mr. Temin gave us to look into for security were: Rebel numbers/recruitment; Rebel leaders/figureheads; Border Statistics/Violence; Public Opinion of Security; Ineffective Police Force; Ethnic Tension; DDR; and International Assistance.<sup>96</sup>

---

<sup>88</sup> Ibid.

<sup>89</sup> "Jonathon Temin" *United States Institute of Peace*. <http://www.usip.org/experts/jonathan-temin>

<sup>90</sup> Ibid.

<sup>91</sup> Jon Temin, Personal Interview. Washington D.C. February 16, 2011.

<sup>92</sup> Ibid.

<sup>93</sup> Ibid.

<sup>94</sup> Ibid.

<sup>95</sup> Ibid.

<sup>96</sup> Ibid.



Mr. Temin told us to look into diversity of economy and Sudan's reliance on oil. He also told us to look into previous conflicts such as the Balkans, Eritrea, Chad, and Cameroon as case studies.<sup>97</sup> He gave us multiple resources to look into such as Global Witness Reports, Small Arms Survey, Interaction, and Afro-Barometer.

Later, over email, Mr. Temin provided us with the Statistical Yearbook for Southern Sudan 2010 which was created by the Southern Sudan Center for Census, Statistics, and Evaluation. This source of data proved to be extremely helpful in collecting information on our indicators. It also provided a baseline for what indicators were already being measured and which ones still need to be.

#### **S.4 CPT Felix Kumai (Catholic Priest, USMA)**

CPT Felix Kumai is a Chaplain at West Point. CPT Kumai is of Nigerian descent and was essential to our understanding of the "eastern" perspective of the issues plaguing the African region. We went to CPT Kumai after presenting our first model of our indicators to our stakeholder, Professor Dave Davis of George Mason University. One of the main criticisms from Professor Davis was that most of our indicators that we based from the research that we had done were from the "western" perspective. This means that without being fully understanding of the culture and nature of the land the consequences are that we have a biased view on the issues that we see within a specific country such as Sudan. As college students there was only so much that we could do to obtain knowledge. We could do all the research online and in books, but getting insight from someone who has actually lived the culture and experienced the pain first hand is invaluable.

We met with CPT Kumai with the list of indicators that we had produced. We knew that since we were specifically focusing on southern Sudan that some of the indicators that we developed would not apply. The insight that we received from him was something that could not be grasped from just readings. He went into detail about things that only people living through the situation could provide.

There were many similarities between Sudan and Nigeria. Both countries experienced civil war and the people were living in harsh conditions. We first presented him a brief background of southern Sudan and went into detail about our specific indicators. He proceeded to give us insight. Some of the issues were similar and some of it was specific to Nigeria, but we gained a perspective that would not have been obtained otherwise. For example like most African countries the natives are faced with poverty. The people are stressed to even provide the basic of necessities for themselves and their families. A crisis that faces the national bank is that these people are turning to the "black market" for better exchange rates.<sup>98</sup> This is an important issue because it undermines the legitimacy of the national bank and puts the money in the hands of those who may not be allotting the money to programs to build the infrastructure or develop social services within the country. The black market was not something that was well published in literature and the news. But talking to CPT Kumai who has gone through the situation we were able to come to some conclusions about this issue.

#### **S.5 GEN William E. Ward (AFRICOM)**

General William E. "Kip" Ward was the first commander of US Africa Command. His command covered 53 African countries and all U.S. military operations and relations in those countries. The mission of AFRICOM is:

"United States Africa Command, in concert with other U.S. government agencies and international partners, conducts sustained security engagement through military-to-military programs, military sponsored activities, and other military

---

<sup>97</sup> Ibid.

<sup>98</sup> CPT. Felix Kumai, Personal Interview. West Point. March 23, 2011.

operations as directed to promote a stable and secure African environment in support of U.S. foreign policy.”<sup>99</sup>

Over his four years as commander he has dealt with and has had firsthand experience of many of the issues in this region. He and his team worked to solve problems such as the one we were tasked with and his insight to our model and work would be invaluable. He came to West Point the day prior to his retirement on March 7, 2011 for the Battle Command Conference and we had the opportunity to present our work to him. At this point in our progress we had solidified our indicators and the major functions under which they fell. Furthermore, we had completed the Systemigram that highlighted the interactions between the major functions and also broke it down to the interactions between the indicators. We presented him with all our products to get feedback before presenting to our stakeholder Professor Dave Davis.

The feedback that we received from GEN Ward was all very positive. In his four years with AFRICOM he said, “There has been no project like this that any of his teams were currently working on.”<sup>100</sup> Essentially we were the first to look at post activity assessments on effects of our chosen indicators. He told us that the Systemigram was a tool that could easily outline the relationships that we found during our research. He said that it was an effective tool to present the information to anyone with even basic knowledge.<sup>101</sup>

He also provided us some possible issues and other views to look at for the way forward in refining our indicators. One problem he foresaw was that our model was not static.<sup>102</sup> So it was specific to the time and place that we were researching. This presents a problem because it does not account for changes over time and the changing environment. He also brought up the possible factor of outside influences that may cause the country to go into civil war. This is not just the north supporting the defected Generals to rise up against the SPLA, but possible other countries interference.<sup>103</sup>

GEN Ward said our POCs were solid, credible sources. He said that John was an important person to interview considering he was a refugee who went through the experience of facing the issues that we have identified. He also pointed to the fact that USAID was someone to seek out. Their main focus is to identify these types of conflicts such as the one in Sudan and understand the situation. GEN Ward indicated that they would be the ones who understood the situation in Sudan better than anyone.

---

<sup>99</sup> U.S. Africa Command Fact Sheet. September 2, 2010. <<http://www.africom.mil/fetchBinary.asp?pdfID=20101109171627>>.

<sup>100</sup> GEN Ward, Personal Interview. West Point. March 23, 2011.

<sup>101</sup> Ibid.

<sup>102</sup> Ibid.

<sup>103</sup> Ibid.



This Page Intentionally Left Blank

## Distribution List

### ***Name/Agency/Address***

Author(s) – 1 Copy  
Department of Systems Engineering  
Mahan Hall  
West Point, NY 10996

C/NRCD Sponsor – 1 Copy  
Assistant Chief of Staff for Installation  
Management  
600 Army Pentagon  
Washington, DC 20310

C/NRCD Sponsor – 1 Copy  
Deputy Assistant Chief of Staff Installation  
Management  
Office of the Assistant Chief of Staff for  
Installation Management  
600 Army Pentagon  
Washington, DC 20310

Dean, USMA – 1 Copy  
Office of the Dean  
Attn: ARD  
Building 600  
West Point, NY 10996

Client – 2 Copies  
United States Africa Command  
OSD Science and Technology Advisor  
Unit 29951  
APO AE 09751

### ***Name/Agency/Address***

Department Head – 1 Copy  
Department of Systems Engineering  
Mahan Hall  
West Point, NY 10996

Director – Center for Nation  
Reconstruction and Capacity Development  
– 1 Copy  
Department of Systems Engineering  
403 Mahan Hall  
West Point, NY 10996

USMA Library – 1 Copy  
USMA Library  
Bldg 757  
West Point, New York 10996

Technical Director, Military Engineering – 1  
Copy  
U.S. Army Engineer Research and  
Development Center  
Geotechnical and Structures Laboratory  
3909 Halls Ferry Road  
Vicksburg, MS 39180-6199

This Page Intentionally Left Blank





**CENTER FOR NATION  
RECONSTRUCTION  
AND CAPACITY  
DEVELOPMENT**

Department of Systems Engineering  
United States Military Academy  
West Point, New York 10096  
[www.nrcd.usma.edu](http://www.nrcd.usma.edu)